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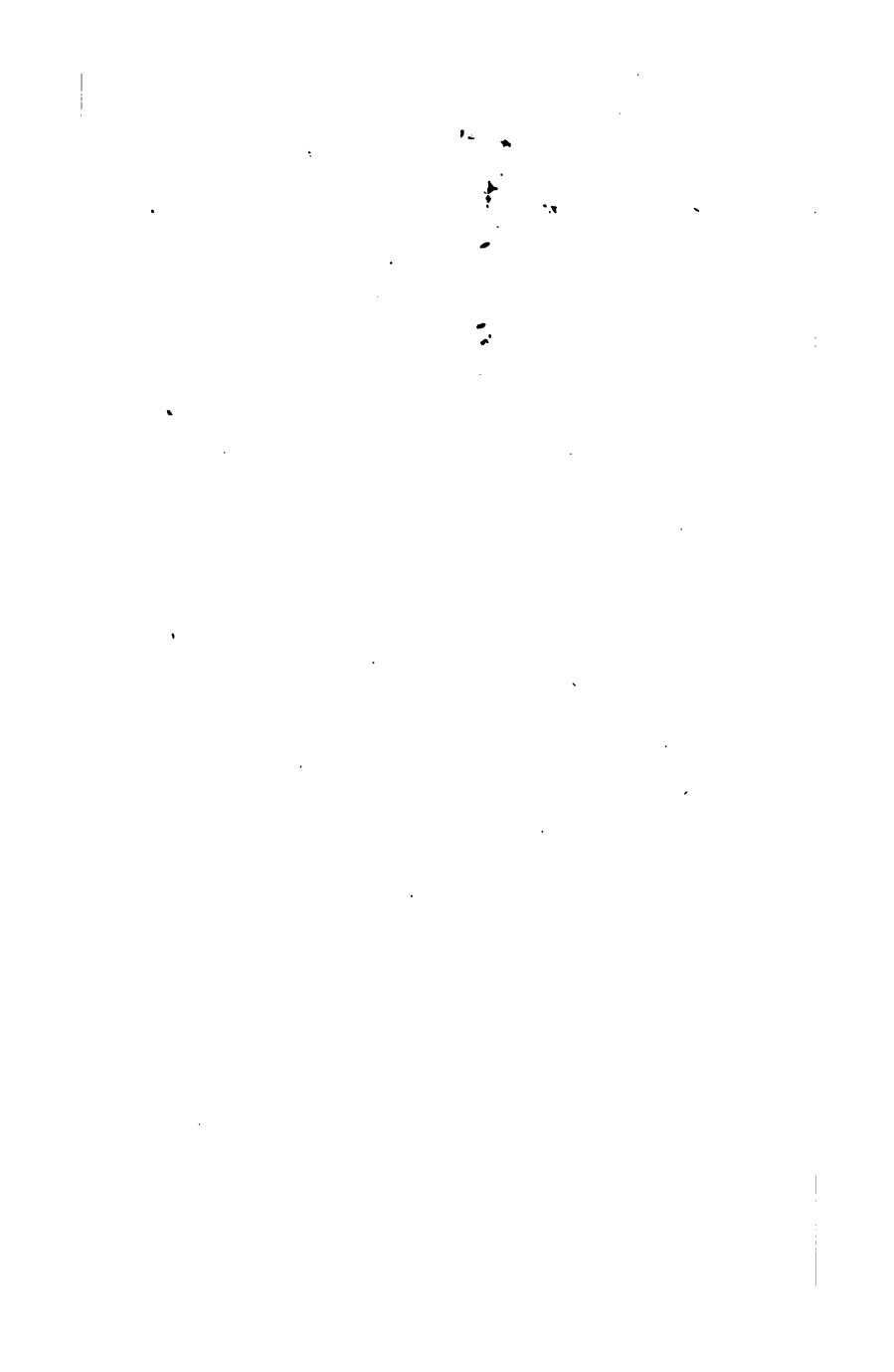
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THE NEW CODE.

THE
USEFUL KNOWLEDGE
READING BOOKS

ADAPTED TO
THE USE OF BOARD-SCHOOLS AND
OTHERS UNDER GOVERNMENT INSPECTION.

BY THE
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EDITORS of '*THE GRADE LESSON BOOKS*' &c.

GIRLS' SIXTH STANDARD.

LONDON:
LONGMANS, GREEN, AND CO.
1873.

THE EDITORS venture to call the attention of Teachers and Managers of Schools to their

INTRODUCTORY LESSON BOOK,

embracing READING, WRITING, and ARITHMETIC, as preparatory to the First Standard under the New Code, 1871.

They also beg to refer to their series of

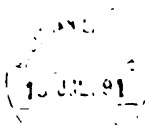
GRADE LESSON BOOKS,

especially adapted to the New Code, 1871, and embracing READING, SPELLING, WRITING, and ARITHMETIC.

These books will be found very suitable for use alternately with the USEFUL KNOWLEDGE SERIES, as required by the Committee of Council on Education.

They are also specially adapted as Home Lesson Books in all the essential subjects of the Code Examinations.

The Editors beg to draw the attention of Teachers to the notice on page viii.



ADVERTISEMENT
TO THE
FIRST EDITION
OF
USEFUL KNOWLEDGE READING BOOKS.

SERIES FOR BOYS.
SERIES FOR GIRLS.
IN SIX STANDARDS EACH.

THE EDITORS of these Series have been led to undertake their production by a desire to supply for our Elementary Schools a set of books combining facility in teaching to read with the inculcation of such useful knowledge as is calculated to prepare the young to enter upon the practical duties of life with intelligent and well-furnished minds.

In attempting to produce such a work, the chief difficulty is that of supplying useful knowledge in a form sufficiently attractive, and so suited to the capacities of children as to awaken their interest and excite in them a thirst for knowledge; in truth, to effect a

threefold object, namely, to teach them to read, to cultivate in their minds a love of reading, and, at the same time, to impart sound and useful instruction in those matters relating to every-day life, *for which no special times can be set apart in the daily routine of an elementary school.*

Hitherto this difficulty has seemed insuperable; and this has led to the production of books addressed almost exclusively to the imagination—the moral and emotional nature of children—to the almost total omission of subjects of practical utility.

Although it must be allowed that a very gratifying degree of success has attended the use of such books, and it cannot be wished that they should be superseded, as they certainly fulfil a very important office in the training of the children in elementary schools, the Editors believe it is generally felt by all thoughtful friends of elementary education, that the school means of training the young will be very insufficient, unless, in addition to books of this class, others be supplied which shall afford more practical information. Also, it is found in the working of a school that a double set of reading-books is very advantageous, and teachers will readily confess that the benefit derived from an occasional change of books more than counterbalances the slight additional expense which is entailed.

The great difficulty, however, which has

been mentioned above, has not, as far as the Editors' knowledge extends, hitherto been overcome.

For the most part, those reading-books which aim at giving useful information to their young readers, have failed in presenting what is attractive and interesting, and adapted to the minds of children. The present Editors believe that this comparative failure may be explained partly on the ground that the books are written rather by theorists than by persons practically acquainted, as teachers, with the minds of children, and partly that the extracts are taken from writers whose ideas and language fly far above their heads; while not unfrequently too many lessons are prepared by the same hand, and thus the books acquire a monotonous and wearisome character.

A further mistake in such books has been made by the introduction of subjects involving technical teaching, which the Editors feel sure can be imparted effectually only through manuals specially treating the several subjects.

The Useful Knowledge Reading Books, therefore, aim chiefly at giving information that shall be valuable in itself, and that shall also lay a firm basis for any special technical education that may be afterwards entered upon. This foundation will best be laid by imparting to boys, for instance, whose livelihood must be drawn from the soil, some knowledge of its products and of the method of dealing with

it; and by supplying, in the case of girls, as far as books can do, the immediate and indispensable need of a real and solid acquaintance with the practical matters involved in the management of a home. It is, further, obvious that much information may be given of the uses to which agricultural and mineral products may be put without entering into technicalities; and in this respect it is hoped the present series will not be found wanting.

The Editors of the Useful Knowledge Reading Books sincerely desire that they may not be misunderstood in these remarks. They make them in no captious spirit, but merely as explaining the difficulties in the way of producing a really suitable series of Useful Knowledge Reading Books; and as indicating the causes of the defects which are admitted by practical persons to prevail in most existing books of the kind.

In determining, therefore, the principles which should guide them in the production of these series, the Editors set before themselves the following points, and have done their best to carry them out:—

1. The lessons contained in the books must impart *useful knowledge*, including in this moral teaching.

2. They must be concise, yet comprehensive.

3. They must have variety and attractiveness in style, and be level with the capacities of the children for whom they are intended.

4. They must not treat of subjects tech-

nically, technical teaching being inappropriate to such books, if not above the capacities of the children for whom they are intended.

5. Looking at the fact that the pursuits and interests of girls are, for the most part, different from those of boys, although they have much in common, *it would be useful and desirable to present a series drawn up especially for girls.* (This series, the Editors hope, will be considered particularly valuable, presenting, as it does, the results of the experience and knowledge of those who, *having devoted their time and talents to the training and management of the young of their own sex*, must be peculiarly, and it may be almost said in some departments exclusively, qualified to produce lessons suited to the wants and capacities of girls.)

6. To carry out the idea, many coadjutors must be obtained specially qualified for the work.

The Editors, feeling assured that schoolmasters and schoolmistresses actually engaged in teaching the young are best qualified to write lessons calculated to interest boys and girls, and adapted to their capacities, appealed therefore to many teachers of approved ability to aid them in this important work—an appeal which, they are thankful to say, has been responded to in the best spirit; and they have great pleasure in announcing that they have been assisted in the work now completed by some of the best educated and most expe-

rienced of the trained and certificated masters and mistresses of elementary schools, and have also received the kind aid of personal friends connected with educational work. With such invaluable help, they have been able to produce two series of books—one for Boys and another for GIRLS—which they hope will thoroughly meet the wants of the classes for whose instruction they are intended.

NOTICE TO TEACHERS.

The Committee of Council on Education now require that each School subject to Inspection shall be provided with **TWO COMPLETE SETS OF READING-BOOKS**, and that the children presented for examination shall show an acquaintance with the **SUBJECT-MATTER** of the Lessons contained in their respective standards.

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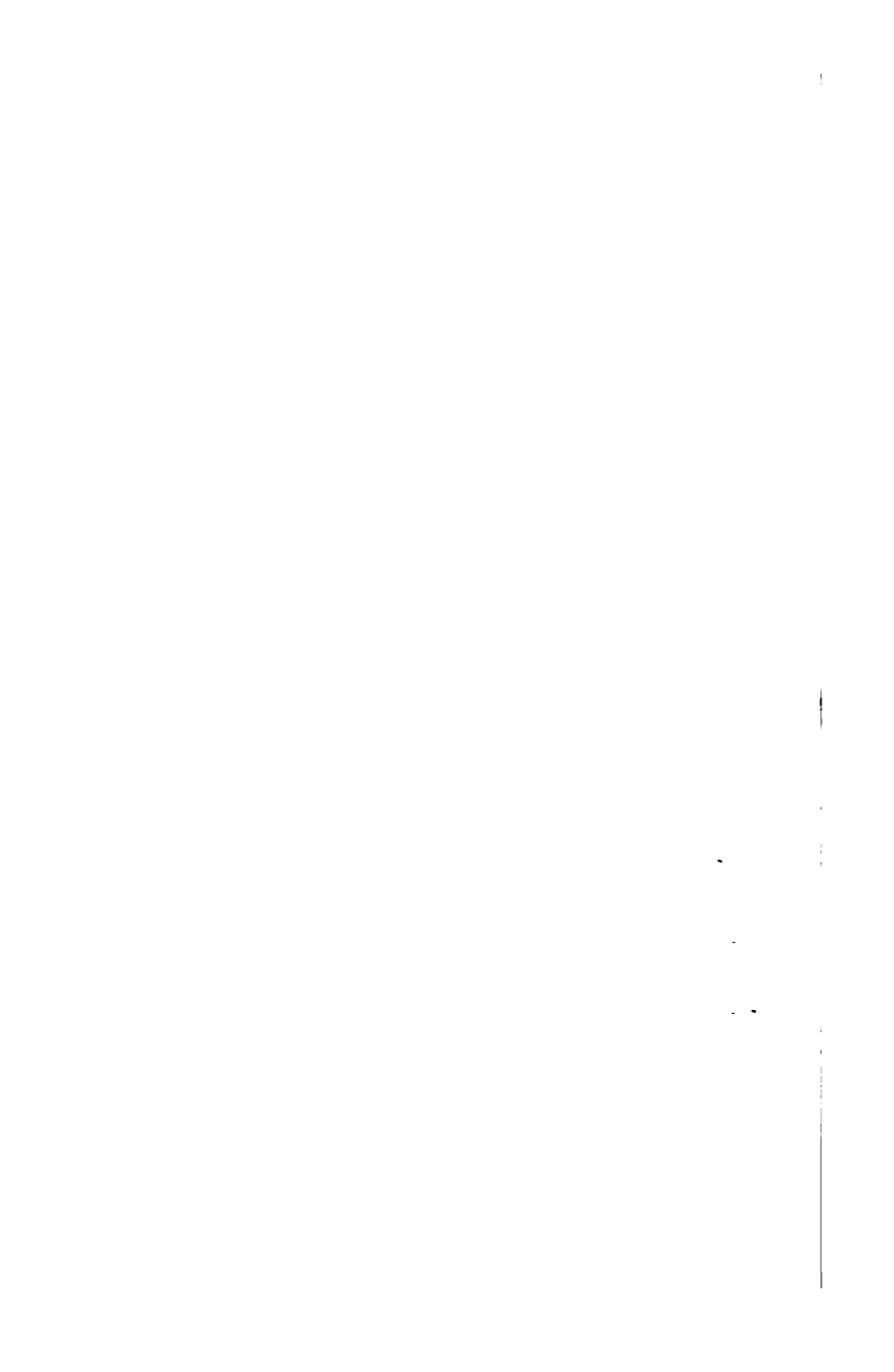
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THE

USEFUL KNOWLEDGE READING BOOKS.

STANDARD VI. (GIRLS' SERIES.)

THE FRAMEWORK OF THE HUMAN BODY.

in-gen-u'i-ty (L. ingenium), <i>skill</i> mus'-cles (L. musculus), <i>the or-</i> <i>gans of motion, fleshy fibre</i> flex'-i-ble (L. flecto), <i>easily bent</i> pre-serve' (L. pre, servo), <i>to take</i> <i>care of</i> nour'-ish (L. nutrio), <i>to support</i> <i>by food</i> in-con-ve'-ni-ence (L. in, con- venio), <i>troublesomeness</i>	dif'-fi-cul-ty (L. difficilis), <i>hard-</i> <i>ness of doing a thing</i> di-vid'-ed (L. divido), <i>separated</i> cor-re-spond' (L. con, respondeo), <i>to agree with</i> par-tic'-u-lar-ly (L. pars), <i>dis-</i> <i>tinctly, done in a special manner</i> e-las'-tic (Gr. elauno), <i>springy</i> phos'-phate (Gr. phos) <i>a sub-</i> <i>stance containing phosphorus</i>
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It has often been remarked that nothing shows greater wisdom and goodness than the formation of the human body. The more we examine the structure of our frame, and the wonderful ingenuity and fitness with which its various parts are united and made to serve their purpose, the more deeply shall we feel that we are fearfully and wonderfully made.

It is very desirable that we should, as early as we can, learn something of the way in which we are made, for this knowledge will not only show us the wisdom and goodness of God, but it will help us to understand how to preserve the bodies which He has made for His service. We should always remember that strength of body and good health are gifts which it is our duty to do our best to preserve; and nothing will enable us to do this better than a knowledge of

2 USEFUL KNOWLEDGE READING BOOKS.

how we are made, and what we ought to do, as well as what we ought not to do, in order to keep ourselves strong and healthy.

In this Lesson, and some which will follow, I intend to give you an account of the make of our bodies, and of the way in which food nourishes the body, and the kinds of food we ought to eat. I do not think I shall tell you anything you will not be able to understand if you attend carefully.

We shall begin with our framework, that is, the bones, which are made strong, so as to support the frame, the flesh, muscles, heart, and other organs of the body. These bones, when all the flesh is stripped from them, form the skeleton. Our framework, then, consists of the skull and face; the trunk, that is, the chest and stomach; and the limbs, which are the arms and legs, and each of which is divided into upper and lower limbs. You will notice that the leg is divided into the thigh, the part above the knee, and the part, usually called the leg, below the knee. These correspond to the upper arm, between the elbow and the shoulder, and the fore-arm, between the elbow and the wrist. In like manner, the ankle of the leg corresponds to the wrist of the arm. Then we have the feet with their five toes on each, and the hands with their five fingers on each. The fingers, however, differ from the toes in being longer, more flexible, and more subject to our will.

In the human frame there are more than two hundred bones, which are of three kinds. They are either long, or broad, or round. The long bones are hollow, and contain a fatty substance, which is called marrow; the other kinds have a great many little holes or cells inside them. These cells contain a greasy liquid or oil, the use of which will be explained presently.

All the bones are very hard, but the teeth are particularly so. The special hardness of the teeth is caused by their being coated with a substance called enamel. I dare say you will at once understand why the teeth have been made harder than the other bones. It is because they are more exposed, and are used in biting and chewing our food.

Although you may not think it, the bones contain blood. Nearly every bone has a hole in it through which the blood is admitted by means of a vessel called an artery, which conveys the blood, and this blood is returned to the heart by means of a vein also connected with the bone.

The bones are made up of lime and an acid, the two together forming what is called phosphate of lime. This explains why doctors order children, whose bones are weak, to take phosphate of lime. Their bones are weak because they have not enough of this substance in them. Bones also contain chalk, which is the carbonate of lime.

You have very likely noticed that the bones of very young children appear soft.

This is the case; and besides, some of the bones which grow in time into strong solid bones are in infancy separated into several pieces, joined together by gristle. So you see how careful you ought to be in nursing or taking care of your baby-brothers and sisters, because their bones, being thus soft, may be easily broken or twisted out of shape.

I spoke just now of the gristle which joins the bones. In full-grown persons, the bones are still joined by this gristle, which we should do our best to keep elastic; for if it ceases to yield easily we find a difficulty in moving about, and suffer pain and inconvenience in various ways. The best means of preserving this gristle elastic are to rise early in

the morning, to be engaged with a cheerful spirit in useful work, and to be temperate in what we take ; that is, never to eat or drink more than is needful to satisfy our hunger or thirst.

In the next Lessons I shall try to explain to you the way in which our framework is put together.

C. H.

THE SKULL AND THE FACE.

de-scrip'-tion (L. describo), <i>explanation, representation</i>	re-sem'-blance (L. re, similis), <i>likeness</i>
cav'-i-ty (L. carus), <i>a hollow</i>	con-nect' (L. connecto), <i>to join</i>
tri'-an-gle (L. tres, angulus), <i>a figure with three angles or corners</i>	se'-ries (L.), <i>order, course</i>
ne'-ces-sa-ry (L. necessarius), <i>that cannot be done without</i>	ca-nine' (L. canis), <i>having the properties of, or belonging to a dog</i>
or-na-ment'-al (L. orno), <i>serving as an ornament</i>	pre-serve' (L. pre, servo), <i>to keep,</i> pu'-trid (L. putridus), <i>rotten, corrupt</i>

As the brain is in the head, directs our actions, and is therefore the moving power of our life, we will begin our description of the human frame with that which forms the head, namely, the skull. The skull contains a hollow bone for holding the brain, two sockets for the eyes, and similar cavities for the ears. Across the front there is a bone called the frontal bone, or forehead ; and behind there is another bone, something like a triangle in shape. At the bottom of the skull, and joining nearly all the bones together, there is a bone in shape something like a bat with its wings spread out. To this bone there are as many as fourteen bones fastened. Coming back to the front part of the skull, we shall observe that at the root of the nose there is a bone having a number of holes bored through it. This bone unites the bones of the face to those of the head or skull ; and the holes are placed in it to allow the

nerves of smell to pass through. We next come to the bones of the jaw and face. Altogether there are six bones on each side, which form the face. These are also called the upper jaw, the lower jaw consisting of but one bone on each side. To both these jaws are fastened very strong muscles, which play an important and necessary part in enabling us to chew our food. We now come to those most useful as well as ornamental bones, the teeth. These, as you know, are placed in the upper and lower jaw, each of which contains, in a full-grown person, sixteen teeth. Children, however, are usually said to have but ten, although, strictly speaking, they have twenty, because the first ten teeth which appear are lost before they reach the age of fourteen. These ten are replaced by ten others which have always been in the jaw, but buried in the gums, ready to take the place of the first ten as they fall out. After the second series of ten teeth has grown, the remainder come out to make the sixteen mentioned above. It is usual to divide the teeth in the following way:—In each jaw there are four front teeth. The two next, one on each side of the front teeth, are called the canine or eye-teeth, and the four beyond, that is, two on each side of the canine teeth, are spoken of as small grinders; while the six adjoining these, that is, three on each side, are called large grinders. I said just now that the teeth were most useful as well as ornamental. You are using them every time you take a meal or speak, and will, therefore, find no difficulty in understanding their uses. The whiteness of the teeth is owing to their being covered with a substance called enamel, which not only adds to their beauty, but is of the greatest use in preserving them, for it renders them very hard, and thus prevents the decay which is liable to be caused by the exposure and constant use

to which they are put. As the proper chewing of our food is necessary to prepare it for entering our bodies and duly nourishing us, it is our duty to do our best to preserve our teeth from decay. We should, therefore, clean them daily, and be careful to remove from them the meat or other food which remains in them after eating, as this very soon becomes putrid, and so helps to destroy the teeth. At the same time, we should carefully avoid picking our teeth with hard substances, such as pins; and they should not be used for the purpose of cracking nuts, or biting substances harder than crusts of bread.

We have next to consider the arrangement of the bones of the ear. Inside the ear is a thin skin, called a membrane, drawn tightly across the hole, something like the parchment across a drum. Behind this membrane is a hollow, which is called the drum of the ear. In this drum are four small bones. These bones are connected with one another, and stretch along inside the passage or hole from the outside to the inside of the head. Here they end at a small opening, a good way within the first one, and across this small opening is tightly drawn another membrane, or sheet of skin, thus forming a second but smaller drum.

The last thing to be spoken of in this Lesson is the bone at the root of the tongue. If you look at the larger end of any animal's tongue, a bullock's for instance, you will see a bone whose shape bears some resemblance to the letter Y. Each of us has a bone like this inside the neck at the root of the tongue; and this bone fulfils the important office of keeping in their right places those parts of our bodies which are used in speaking, chewing, and swallowing, as it is fastened to the muscles which aid us in these actions.

Having in this Lesson dealt with the bones of the head and face, we shall go on in the next to speak of those of the trunk and other parts of the skeleton.

C. H.

THE TRUNK, THE ARMS, AND THE HANDS.

com-pose' (L. compono), <i>to make up</i>	grad'-u-al-ly (L. gradus), <i>by degrees</i>
im-me'-di-ate-ly (L. in, medium), <i>directly, without separation</i>	cor-re-spond'-ing (L. con, respondeo), <i>agreeing with</i>
in'-flu-ence (L. influo), <i>power</i>	con-clude' (L. concludo), <i>to decide, to infer</i>
sen-sa'-tion (L. sentio), <i>feeling</i>	mar'-vel-lous-ly (Fr. merveille), <i>wonderfully</i>
ad-apt' (L. ad, apto), <i>to make suitable, to fit</i>	se-cure' (L. se, cura), <i>to make fast</i>
e-las-ti'-ci-ty (Gr. elauno), <i>the property by which a substance springs back to its first form or position</i>	flex-i-bil'-i-ty (L. flecto), <i>the quality of being easily bent</i>

If the framework were divided into two equal parts from top to bottom, each part would show the same divisions and arrangement of the bones. We shall, therefore, describe one side, and thus explain both.

Let us take, then, first the spine, or back-bone, as it is commonly called. This is composed of twenty-four separate pieces, the seven lower ones of which are very large and strong; the twelve immediately above these being somewhat smaller, while the remainder, forming the bones of the neck, are smaller still. These twenty-four bones, placed one above another, contain a hollow channel. This channel is filled with a soft substance, which is a continuation of the brain, and is called the spinal marrow. This substance is very important in its influence upon our health, and even our life; for if it be hurt in any way, sensation and motion are lost

below the part injured. Wonderful wisdom and care are shown in the construction of the spine, to secure at once both strength and flexibility; but we should be most careful not to tax these qualities too much, for the spine once broken can never be mended. To the spine is fastened one end of each of the ribs, which are twelve in number. Seven of them are joined by the other end to the breast-bone by means of gristle, the elasticity of which gives free play to the lungs for breathing and for the circulation of the blood. These seven bones are called the true ribs, while the other five, not fastened to the breast-bone, are called the false ribs.

The breast-bone consists in infants and young persons of several pieces, generally three, united by gristle. This gristle, however, gradually hardens, so that the three bones and the gristle form in time one bone. The shoulder-blade, as it is called, is a broad flat bone, corresponding in some points to the breast-bone, to which it is bound by the collar-bone. The use of the shoulder-blade is two-fold. Muscles are fastened to it, and in the front part of it is a socket in which the round ball of bone at the upper end of the arm is placed, and in which this ball moves. As you will conclude from what I have just said, the arm is fastened to the shoulder-blade by its upper part, which consists of one long round bone. This bone is joined to the two bones of which the lower part of the arm consists by a hinge at the elbow, this hinge being kept in its place by gristle-straps. You will observe with regard to the motion of the lower arm that it is always the same. Being on a hinge, you can move it only up and down, just as you can move a door backwards and forwards. But you may move the upper arm in any direction; because it is placed in a socket, and thus admits of movement round, or up and down. To the two

lower bones of the lower arm, one of which is larger than the other, the wrist is united. This is made up of eight bones, which are so marvellously joined to those of the lower arm as to be capable of very ready motion.

I shall close this Lesson by describing the bones of the hand. These are altogether nineteen in number, and are similar in shape, but of various lengths. The four longest are united at one end to the wrist-bones by means of gristle secured by a sort of elastic string. At the other end they are united to the first joint of the finger, and thus support the palm of the hand. The four bones joined to these are shorter than those which support the palm, but are longer than the next four. The thumb has one bone less than the finger. The various joints of the finger are hinge-joints like that of the lower arm, admitting of but one motion. The hand presents one of the most wonderful proofs of the divine wisdom in adapting the different parts of our bodies to their particular uses. Beauty, strength, flexibility, are all in a wonderful way combined in the hand. Its usefulness and beauty are so great that a very learned man wrote a large book on this subject alone. It would be out of place for me to attempt to describe to you what this writer says; but you can see for yourselves how wonderfully fitted for its uses the hand is, and how many, various, and important those uses are.

In the next Lesson I shall describe the lower limbs of our framework

C. H.

THE LOWER LIMBS.

ex-trem'i-ty (L. extremus), <i>the end of a thing</i>	rev'-er-ence (L. reverentia), <i>fear mixed with respect</i>
at-tach' (Fr. attacher), <i>to join</i>	but'-tress (Fr. bout), <i>a prop, a support</i>
oc-cur' (L. occurro), <i>to come in to the mind, to happen</i>	con-clude' (L. concludo), <i>to end, to finish</i>
in-con-ve'-ni-ent (L. in, convenio), <i>unsuitable, annoying, troublesome</i>	dis-play' (L. dis, plico), <i>to show</i>
suf-fi'-cient-ly (L. sufficio), <i>enough</i>	form-a'-tion (L. forma), <i>make</i>
con-tract'-ing (L. contraho), <i>drawing together</i>	pe-cu'-li-ar (L. peculium), <i>belonging to one alone</i>
	con-tem-pla'-tion (L. contem-plo), <i>serious thought</i>

UNDER this head we have to consider the hip-bones, with the bones of the leg, ankle, and foot.

The hip-bone, in full-grown persons, is a strong bone which contains the hollow in which the round ball at one extremity of the thigh-bone is placed, as will be described below, thus forming a socket-joint, like the upper part of the arm, admitting of motion in any direction. The two hollows attached to the hip-bones are joined by a gristle in front, and by a strong bone behind. Like the arm, the bones of the leg are divided into two parts, one of which consists of a single bone, and is called the thigh. This upper or thigh-bone is longer than the bones below the knee; and, like the upper arm, has at the end a round knob or head, which fits into a hollow attached to the trunk and made to receive it. The lower part, usually called the leg, consists of two bones, like the lower part of the arm, one larger than the other, the smaller one being outside. The larger of these two and the thigh-bone meet and form a hinge-joint at the knee, just as the lower arm meets the upper at the elbow. In the front of the leg, at the place where the leg and thigh meet, is placed a round flat bone lying very close upon, but not joined to, the two bones of the leg,

which meet here. This bone is called the knee-pan, and is fastened to the thigh and leg by means of gristle.

At the lower end of the leg-bones we have the ankle. This consists of seven short bones of different sizes and forms; and to it is joined the foot. This, again, like the hand, does not consist of a single solid bone, which, it will at once occur to you, would be as difficult to manage and as inconvenient as a wooden foot, but of twenty-six small bones fastened together by gristles. These gristles are sufficiently elastic to permit of the foot spreading out to the shape of the surface on which we tread, or of contracting to a certain extent so as to grasp any round or narrow plank, or other thing to which we may wish to cling by them.

To do this, however, much and early practice is necessary. It is the elastic character of the gristles which fasten together the bones of the foot that enables acrobats, or, as we call them, 'tumblers,' to do so much in the way of clinging to, or clasping things with their feet. Doubtless, however, the intended use of the particular make of the foot was that it might have the property we have spoken of, namely, that of spreading out to the shape of the surface trodden upon. Another singular and beautiful feature in the formation of the foot is the arch, which is formed in this way. The heel of the foot, as you will observe, runs out beyond the leg, and is fastened to the foot by an elastic joint. The bones of the great toe in front correspond with the heel behind, and thus the bones of the foot between them, which we call the instep, are raised, forming an arch, the heel at one end and the great toe at the other being the supports or buttresses of the arch.

I cannot conclude this Lesson without remark-

12 USEFUL KNOWLEDGE READING BOOKS.

ing the wisdom and goodness displayed by our Almighty Creator in the formation of the foot. This member of our body may be said to be peculiar to man. It is true the monkey possesses a member something like it, but it is not exactly similar. The monkey is a capital climber, but when he walks he does so in a clumsy manner; for his feet, which are very much like hands, are not well fitted for this kind of motion. Man's foot, on the contrary, is exactly adapted to the purpose. Except the slight curve of the arch, the foot is flat, by which man is able to plant it firmly on the ground and to walk erect with ease. He is thus taught, if he will learn the lesson, to look upwards to his gracious Father, who made him, with eyes of reverence and love, in the contemplation of the wonderful framework of his own body, displaying, as it does in the highest degree, the marks of wise and loving design, so that he should be led to exclaim, 'O Lord, how manifold are thy works! in wisdom hast thou made them all.'

C. H.

ON FOOD. (LESSON I.)

con-struct' (L. construo), <i>to make, to build</i>	im-part' (L. in, pars), <i>to grant, to communicate</i>
nour-ish (L. nutrio), <i>to support by food</i>	cir-cu-late (L. circular), <i>to move round, to spread</i>
in-tro-duce' (L. intro, duco), <i>to make known, to lead or bring into</i>	ex-pose' (L. expono), <i>to lay open, to endanger</i>
de-scrip'-tion (L. describo), <i>representation, the act of describing</i>	pro-vide' (L. provideo), <i>to prepare, to procure beforehand</i>
pro-mote' (L. promoveo), <i>to forward, to advance</i>	or-i-gin (L. origo), <i>a beginning, source</i>
	sus-tain'-ed (L. sustineo), <i>supported</i>

IN the previous Lessons I have striven to give you some idea of the wonderful and yet simple way in which the human frame is constructed. This

frame, as you know, supports those solid parts of the body, including the interior organs, which, taken together, make up the human system. You know that this body is nourished and sustained by means of food which, introduced into it through the mouth, is acted upon by various organs of the body, undergoes certain changes, and is turned into that life-giving fluid, the blood.

Although I think it would be out of place for me to attempt a description here of the various organs of the body with their action and uses, it will be very useful for you to know something of the process called digestion, in order that you may understand the importance of taking proper food in a proper manner. This is important for yourselves with regard to your own health; and as you may, and probably will, have at some time or other the care of children, it is also highly important that you should know how to treat them so as best to promote their health and growth.

The consideration of this question of food is, as I hope you will see when you have read this Lesson and some that will follow it, of considerable moment. Some people, we know, think too much of what they should eat and drink. Some, on the other hand, think too little on this subject. Both of these are wrong. Those who think too much of food are wrong because they become gluttonous, sensual and selfish—living to eat instead of eating to live; but those who think too little of it are equally wrong, for this reason. The preservation of our bodily health is necessary to the due performance of our duty, and health cannot be maintained if we do not take proper food in a proper manner. Hence it is well for us to become acquainted with the object for which we take food, and to know the kind of food that we ought to partake of. A further use of this

enquiry will be found to consist in the fact that it will lead us to see that, by the bounty of Our Divine Provider, suitable food is within the reach of most.

The object for which we take food is twofold. We take it, in the first place, that the waste constantly going on may be supplied ; and, in the second place, that the warmth necessary to our life may be imparted to the system.

As I have no doubt you are aware, the proper supply and the healthy condition of the blood are essential to our existence. This blood circulates through the frame, and is produced by digested food.

It must be a question of great interest, therefore, to enquire how this blood is so produced ; and I will now try, as shortly and simply as I can, to explain the process by which food is changed into blood.

The food when taken into the mouth is bruised by the action of chewing, and, having been mixed with the saliva, is swallowed. It is then conveyed to the stomach, where it dissolves into a kind of grey paste, called chyme, through the action of a fluid called the gastric juice. From the stomach the food passes into the small intestines and mixes with the bile and other fluids. These cause the nutritious part of the food to separate from the unnutritious parts, in the form of a milky sort of fluid, called chyle. This chyle is carried away by means of little vessels and emptied into the blood, near the heart, being in the process exposed to the air from the lungs. This, then, is the blood which sustains our life ; and the process I have described is continually going on. So that, as we see, from our food is produced that wonderful fluid which supplies us with power, and without which we must suffer from disease, only to be relieved by death.

Hence we can readily see that the manner in

which we take our food is of great consequence. It is clear that food would injure us if passed into the intestines before being digested. To prevent this, nature has provided us with a guard in the shape of a valve which refuses to let any but the chyme pass. Now, to be digested, the food must be properly prepared before it enters the stomach; and, to be properly prepared, it must be well chewed before it is swallowed; otherwise our watchful guard seems to lose the power to resist the approaches of these indigested masses, and, after rejecting them frequently, at last allows them to pass into the intestines, where they produce the discomforts and pains of indigestion, with many serious diseases which have their origin in that complaint.

Having considered the object and proper way of taking food, I shall in the next Lesson speak of the kind of food essential to the due preservation of health.

C. H.

ON FOOD. (LESSON II.)

na'-tur-al-ly (L. natura), <i>according to nature</i>	con-stit'-u-ent (L. constituo), <i>that of which anything is made</i>
civ'-il-ise (L. civis), <i>to reclaim from barbarism, to instruct in the arts of life</i>	pro-por'-tion (L. proportio), <i>equal or just share</i>
im-pu'-ni-ty (L. in, punio), <i>freedom from punishment</i>	in-clude' (L. includo), <i>to contain, to comprehend</i>
ar-ti-fi'-cial (L. ars, facio), <i>made by art, not natural</i>	com-bus'-tion (L. comburo), <i>burning</i>
suit-a-bil'-i-ty (L. sequor), <i>fitness, agreeableness</i>	vi-tal'-i-ty (L. vitalis), <i>the principle of life</i>

HAVING in the previous Lesson spoken of the object of food and the mode of taking it, we now come naturally to speak of the sort of food we ought to partake of. As introducing this subject, we may

remark that the question which will occupy this Lesson is of more importance to a civilised people than it is to those who are uncivilised. The latter live in a simpler, hardier manner, and can take with impunity food that others, who live a more artificial life, could by no means indulge in without injury. Their digestion could not bear the sort of food partaken of by their physically stronger, if less cultivated brethren. It is plain, then, that we should pay some regard to the suitability of the food we take. We mean by suitable food, not that which is dainty or tasty, but food which contains the elements necessary to render it wholesome and nourishing.

You will have gathered from our previous Lesson that the two essentials of proper food are flesh-forming and warmth-giving qualities, the former that it may supply the waste of our bodies constantly going on, and the latter that it may sustain the animal heat necessary to our existence.

By considering what are the constituents of the body, we shall be able to comprehend the sort of food which it is advisable for us to eat to secure the nourishment required.

Now, the science of chemistry tells us that the human body is composed of oxygen, hydrogen, nitrogen, and carbon. The food we take, therefore, should contain these elements in due proportion, if we are to be properly nourished by it. Accordingly, we find that Providence has provided these both in the animal and vegetable world.

To render the matter clearer, we will divide the different kinds of food into *two* sorts, viz. :—

(1) Flesh-forming foods. (2) Warmth-giving foods.

In the list of flesh-forming foods we find all food obtained from animals, except the fatty or oily parts,

some vegetables, as wheat, oatmeal, beans, oats, turnips, rice, potatoes, pears, and apples. All these are composed chiefly of nitrogen, which is a very important ingredient in forming flesh.

In the list of heat-giving foods, we have all fatty and oily substances, and nearly all the productions of the vegetable kingdom used for food, not included among the above list of flesh-forming vegetables. Such food contains carbon, hydrogen, and oxygen in various proportions. These all aid in supplying heat, but carbon is the most important for this purpose, as it is the great feeder of combustion.

We would ask you to observe here that brown bread and oatmeal are excellent and most nourishing kinds of food. Next to these in importance come rice and sago. Both of these, but especially rice, are most valuable. As you are probably aware, there are millions of people in eastern and other countries who live chiefly upon rice, which is susceptible of great variety in the methods of cooking it, and is always easily digestible. Potatoes take rank with bread and rice, and in addition to these may be mentioned beans, peas, lettuces, and onions, among vegetables; and among fruits, apples and pears.

We may also remark that milk and wheat-flour are both flesh-forming and heat-supplying foods, from which fact it will appear that these two are the most perfect of their kind, since they possess both the essential properties of food, so that persons can live a considerable time on either.

Thus it will be seen that flesh-forming food will not do alone. Animal warmth must be maintained, and if there were no carbon in our food, this would fail, for the lungs draw carbon from all parts of the body, and, if new supplies were not introduced, would soon exhaust the carbon from the blood. The result

of this would be that animal warmth would become gradually less and less, until, finally, vitality would cease. And similarly, if carbon food exclusively be taken, the blood will be spoiled by excess of carbon and the absence of the other elements essential to life, whence death would soon ensue.

From the above the conclusion may be easily drawn that temperance and regularity in taking food, and simplicity in the nature of it, are important aids in preserving health, to which we may add that meals should be taken at sufficiently long intervals apart, since no person in health requires more than three meals daily.

Another thought worthy of notice, suggested by the considerations and facts we have mentioned, is that luxury and expensive living are not to be envied, but, on the contrary, to be avoided. The simpler and plainer our food, the better our prospect of preserving our health, since all experience proves that those who have reached the greatest age have been persons who have been simple in their tastes, and moderate in the indulgence of their appetites.

C. H.

ON HEALTH AND ITS PRESERVATION.

un-fa'-your-a-ble (S. un, L. faveo), <i>not friendly or convenient</i>	dim-i-nu'-tion (L. diminuo), <i>les-</i> <i>ening</i>
con-nect' (L. connecto), <i>to join,</i> <i>to unite</i>	cal-am'-i-ty (L. calamitas), <i>mis-</i> <i>fortune, distress</i>
ex-ter'-nal (L. externus), <i>outward,</i> <i>visible</i>	re-lin'-quish (L. relinquo), <i>to</i> <i>quit, to forsake</i>
ex-cēs'-sive-ly (L. excedo), <i>in an</i> <i>extreme degree</i>	con-duce' (L. conduco), <i>to tend</i> <i>to, to contribute</i>
pro-mote' (L. promoveo), <i>to ad-</i> <i>vance, to forward</i>	en-gen'-der (L. in, genus), <i>to</i> <i>cause, to produce</i>
frus'-trate (L. frustro), <i>to defeat,</i> <i>to disappoint</i>	ac-cu'-mu-late (L. accumulo), <i>to</i> <i>increase</i>
per'-ma-nent-ly (L. permaneo), <i>lastingly</i>	ap-pre'-ci-ate (L. ad, pretium), <i>to</i> <i>estimate truly</i>
mit'-i-gate (L. mitigo), <i>to soften</i>	in-vin'-ci-ble (L. in, vinco), <i>un-</i> <i>governable, unconquerable</i>

MANY important subjects have to be considered besides the taking of proper food, if we would observe the necessary conditions of health. There are outward influences which have a large share in affecting the health for good or ill, and in rendering the body fit or otherwise to receive the food we take. If these influences are unfavourable, the best of food will often fail of its proper effect.

All the organs of the body are very closely connected, acting and reacting upon one another. Thus the lungs may suffer from cold applied to the skin; the stomach from injury done to the head, and the head from accidents to the back. Each of these organs is also related to external bodies, and seriously affected by them; as, for instance, the stomach depends upon food received from without; the eye is affected by light; the ear by sound, and so on; and the things necessary to our health may, improperly or excessively indulged in, destroy the very organs whose healthiness and usefulness they are intended to promote. Light may blind, sound may deafen, and food may destroy.

As, then, there is this connection, and there are these influences at work, we must observe the conditions required for the realisation of their benefits, otherwise we either neglect or abuse the gifts bestowed upon us, frustrate our Maker's arrangements, and, as a sure consequence, become ourselves the sufferers in the end. We must take it as an unalterable truth that we cannot disregard the conditions of health without suffering the diminution or loss of that precious gift, and to the same extent our opportunities of usefulness; whereby we probably become a burden to those whom we are bound to support.

Of course, if without faults of our own, we are visited with sickness or disease, no blame can attach to us, and we can but bear our affliction patiently; but if we bring these calamities upon ourselves, we deprive ourselves of the richest of earthly blessings; for health is a far more precious possession than money, and there is many a wealthy man who would freely relinquish his riches, if by doing so he could secure the poor man's health. The young especially should think of the importance of preserving their health, for its value is often not thought of until it be lost. It is, therefore, necessary that they should, while young, look upon it as a gift to be preserved by every means in their power. In order that I may do what I can in this matter, to help those who may read these Lessons, I purpose to give some information upon the duty of attending to certain things which are of the highest importance to health, and I therefore ask my young readers to give me their attention while I say something upon the subjects of air, light, and cleanliness.

Taking the subject of cleanliness first, and light next, leaving that of air for the close of the Lesson, I may remark that cleanliness is of very great impor-

tance, as being not only necessary to health, but also as having a great influence in promoting self-respect, and in securing the favourable consideration of others. Attention to personal cleanliness is highly important in preserving health, for nothing more conduces to this than the keeping the pores of the skin free from dirt, and free, therefore, to perform their proper functions. One of these functions is to make a passage through which the impurities continually engendered within the body may escape. Our Maker has provided this passage in the pores of the skin, but if these are closed up through our neglect in leaving the skin uncleansed, the body retains the impurities which accumulate within it, and finally bring on disease, which is often fatal. We all think it necessary to wash our hands and faces daily; why should we not do the same for our bodies? It is obvious that they need a daily wash as much as those parts which are seen, and that they ought to have it. This point is very important for every one, but especially for those who have the care of children; and I hope that those of my young readers who have to wash and dress their brothers and sisters, or are likely to become nurses, or in any other way to have the care of children, will remember how important this habit of constantly cleansing the whole body is, and will never omit or grudge the labour of daily washing their little charges.

The question of light is closely connected with that of cleanliness, for light acts upon the skin, exercising through it an influence upon the blood, and in this way upon the whole system. It is true that people can live a long time debarred from the enjoyment of light, but they cannot remain in a healthy state without it, for they become pale, emaciated, and depressed in spirits, and their nervous system is permanently injured. Just as the light

of the sun is essential to the healthy life of vegetables, so is it equally necessary to the life of animals. Without light they droop, and become sickly. Wherever there is good health, there is plenty of light; and as God has given us in free abundance the three great essentials for securing health of body and soundness of mind, namely, water, light, and air, let us determine to enjoy these benefits to their full extent.

I am thus brought, naturally, to consider our third subject, namely, fresh air, which is as necessary to the preservation of our health as the right use of food. We may, indeed, almost say that air is more necessary to life than food, for we can live longer without food than we can live without air.

It is quite certain that many people do not appreciate the importance of fresh air or the injurious effects of foul air; otherwise they would not be careful to shut all the windows and doors, 'Lest the winds of heaven should visit their faces too roughly,' forgetful that they are doing themselves a double wrong, as they not only shut out the fresh but also shut in the foul air. To have the truth of this exemplified, we have but to go into any bed-room in the morning, after it has been slept in with the windows closed, and our sense of smell will soon prove to us with what effect the pure air has been removed, and in its place impure and poisonous air introduced. This is always the case, in such circumstances, even in the bed-rooms of those whom we know to be scrupulously clean; and where the room is occupied solely as a bed-room by, perhaps, one, or not more than two persons. How much worse must it be when the room is used during the day for a living room, and at night by several sleepers! During the night the occupants have been inhaling, while it lasted, the pure air, and have been exhaling impure

air into the room from their lungs, as well as from their bodies through the pores of the skin; and, when the pure air has been exhausted, they have re-inhaled the poisonous air thus emitted, and so have laid the foundation of disease. Persons thus situated speedily show the ill-effects of their mode of life in their looks, and experience them in their feelings. They become pale, and look careworn; freshness and vigour are displaced by listlessness and lassitude, and if life be not a burden, it soon ceases to be a pleasure to them.

It seems a great pity that such evils should be suffered, for they may in many cases be avoided, and in all mitigated by a very simple process, namely, the introduction of fresh air through the window, which should be always open to some extent. Unfortunately, many people have from very mistaken notions an invincible objection to an open window. They think that the introduction of cold air produces 'colds.' But this is not so. 'Colds' are in reality 'fevers,' and arise from want of exercise, unclean and imperfectly acting skins, and from insufficient ventilation. The very means, then, that these persons take to preserve themselves from 'catching cold' are calculated to produce the cold. Every one objects, and very rightly, to partake of dirty water, yet how many thousands wilfully inhale air containing dirt of a far more deleterious character, and acting upon organs of a far more sensitive and vital nature than the water which we swallow with our food!

Be sure, then, that it is a very important thing—a positive duty—to secure a plentiful supply of fresh air. In God's providence it has been abundantly afforded; and it is, therefore, a gift everyone may enjoy. Let your resolve be that, so far as you can, you will enjoy this gift, and persuade all whom you can influence to enjoy it too.

In order that I may help you to understand more clearly the importance of this subject, I shall, in the next Lesson, explain simply the nature of the atmosphere and ventilation, with some of the most important operations of the air upon our bodies.

C. H.

THE ATMOSPHERE AND VENTILATION.

at'-mo-sphere (Gr. *atmos*, *sphaira*), *the air which surrounds the earth*

ven-ti-la'-tion (L. *ventilo*), *the act of causing air to pass through*

in-gre'-di-ent (L. *ingredior*), *one of the parts of which a compound is made up*

com-bi-na'-tion (L. *con*, *binus*), *union*

ap-pa-ra'-tus (L.), *instruments for carrying on an art or trade*

per-pet'-u-al-ly (L. *perpetuus*), *continually*

vi-tal'-i-ty (L. *vita*), *the principle of life*

ac-quire' (L. *acquirō*), *to gain, to attain*

fa-cil'-i-ty (L. *facilis*), *easiness, greediness*

e-mis'-sion (L. *emitto*), *the act of sending out*

com-bus'-tion (L. *combaro*), *the act of burning*

THE atmosphere, or the air we breathe, is a fluid surrounding the earth, and reaching, it is believed, to a height of forty-five miles. This fluid, although we can neither see, grasp, nor taste it, is very heavy, its weight being greatest near the earth, and gradually becoming less as its distance from the earth becomes greater.

The following gases in combination form the chief ingredients of which the air is composed:—

OXYGEN is a gas having neither taste, colour, nor smell; yet so important are its properties, that no animal could live without it neither could we have light nor heat from coal, wood, or candles without it.

NITROGEN. This gas resembles oxygen in having neither colour, taste, nor smell, but differs from it in these important particulars, that while oxygen supports combustion, flame is extinguished in nitrogen,

and further, if animals breathe this gas only, they speedily perish.

CARBONIC ACID is colourless, but it has a slight odour and a sour taste. This gas is poisonous to animals, and air contains only a small portion of it in its composition.

Watery vapour ascending from the sea and rivers of the earth is absorbed by the air, and is necessary to the life of plants and animals.

You will see from the above that not one of the substances of which air is composed, if taken separately, is able to support life, and one of them is a deadly poison; yet by the nice arrangement of their combination they become not only harmless but the most precious gift to man.

We should here notice the interesting fact that all animals, human beings included, continually render the air they inhale poisonous. We are, therefore, provided with an apparatus for blowing away the poisonous matter which collects within the body. This apparatus, the lungs, inhales air at the rate of eighteen pints in every minute, that is a pint at every ordinary breathing. The important part played by the lungs will be seen from what follows.

The whole blood in a grown-up person weighs about 28lbs. This is sent through every part of the body, by means of the heart and blood-vessels, in two minutes and a-half in healthy persons. During the process of circulation the blood becomes of a dark colour and loses its pure properties, which are restored to it by the pure air breathed into the lungs. By means of this pure air the blood, as it passes and re-passes from the heart, is cleansed and purified. The blood, you see, thus perpetually travels through the body, bearing vitality and vigour in its passage, and losing, through the agency of the pure air received into the lungs, the corruption and impurity it has acquired in its journey.

It is plain, then, that, if instead of pure air, foul air enters the lungs, this work of blood purification cannot go on. The consequence in such a case is, that the circulation becomes slower, the body enfeebled, and, eventually, life ebbs away. You see from this that foul air, failing health, and even death, are closely connected.

I think it will be unnecessary for me to say any more on the importance of pure air; and it will be evident to my readers that it is a positive duty to pay particular attention to ventilation, which means the giving facilities for the ingress of pure air and for the egress of foul air.

How common it is for people who live in towns to sit the whole evening with closed shutters and doors, while the gas is combining with the impurities of the breath to fill the rooms with stifling and poisonous air! Wherever gas is burning, or even lamps are used, there should always be an opening to admit pure air, and to allow of the escape of the impure air. Similarly, wherever persons are shut in rooms for hours, as in bedrooms, or in workshops, where numbers are assembled, special attention should be paid to the ventilation of the rooms; and, as a last remark on this subject, I urge upon all the importance of removing from rooms or other places in or near the house all impure matter, which otherwise will taint the air, and largely aid in producing fevers of a very fatal character. Attention to points such as those indicated in this and the preceding lessons is within the power of all, however poor, and it will largely help them, under God, in securing that which all, rich or poor, deem the greatest of earthly blessings, namely, good health. C. H.

THE NATURE OF THE BLOOD.

nat'-u-ral-ist (L. natura), <i>one versed in natural science</i>	ac-com'-pan-y (L. ad, con, panis), <i>to go or join with</i>
ef-fect'-ed (L. efficio), <i>produced, brought to pass</i>	con-sump'-tion (L. consumo), <i>the act of consuming</i>
an'-a-lys-ed (Gr. ana, luo), <i>resolved into first principles</i>	chem'-i-cal (Ar. kimia), <i>pertaining to chemistry</i>
co-ag'-u-late (L. coagulo), <i>to curdle</i>	com-bi-na'-tion (L. con, binus), <i>union, association</i>
in-nu'-mer-a-ble (L. innumerus), <i>that cannot be counted</i>	in-test'-ines (L. intus), <i>the bowels</i>
or-gan'-ic (Gr. organon), <i>consisting of organs</i>	nu-tri'-tious (L. nutrio), <i>having the power of nourishing</i>
e-lab'-o-ra-ted (L. elaboro), <i>produced or perfected with great labour</i>	lym-phat'-ic (L. lymph), <i>pertaining to the colourless fluid called lymph</i>

It has hitherto been beyond the power of the greatest naturalists to determine wherein *life* consists. The utmost they can as yet see is that it is a process of growth—a continual rising of atoms into life and a sinking back into lifelessness again. Hence death is necessary to life, and in every instant of an animal's existence new living atoms are being brought into the system, and old, dying, or dead ones are being carried out.

Now, the blood is the agent by which this is effected. It is laden with the rich stores which build up every member of the body, and it is laden, too, with the worn-out atoms which the body is hastening to rid itself of.

From this we see the great importance of the blood, and the interest with which it is analysed and examined. Any portion of blood drawn from the veins of an animal soon changes into a *clot*. This change is called *coagulation*. It is caused by the formation of innumerable very minute threads called fibrine, which stretch and interlace in all directions through the mass. These threads are

light in colour, and resemble gum, but hold in their network an immense number of tiny red cells or *corpuscles*. By proper means the fibrine and corpuscles may be obtained separately.

The fibrine and corpuscles are the chief elements of the blood, and much careful, patient labour has been expended in trying to ascertain their nature. It is thought that fibrine in its dissolved state is that element of the blood which is on the point of becoming organic, and of uniting with the living tissues of the bodies. It is fibrine which is poured out abundantly to fill up the gap which a wound makes, and its forming so quickly into the network of threads in blood drawn from the body seems to betoken a readiness to organise into tissue.

As to the little red cells or corpuscles, much is still very uncertain about them. They are very minute, far too small to be distinguished with the naked eye. When examined with a powerful microscope, they are seen to be flattened cells, something in the shape of coins. Though they are so minute, yet each one is a perfect bag, and holds certain red substances which give the colour to the blood.

Now it is well known that the blood which runs into the lungs after flowing through the body is dark red, while the blood which flows from the lungs is bright red. Hence, these tiny blood cells or corpuscles change their colour in passing through the body, and again in passing through the lungs.

Again, it is known that the blood returns to the lungs charged with carbonic acid, for it is the great work of the lungs to disengage the carbonic acid, and supply oxygen in its place; and hence it has been concluded that the office of these corpuscles is to be the carriers of these two gases—carbonic acid and oxygen—a most important office, truly.

Not a movement of the tiniest muscle can take place

without some waste of substance. And this waste *accompanies* instead of *following* the action, and is as much the *cause* as the *effect* of it. No such waste can take place without oxygen being at hand for the carbon and other elements of muscle to unite with; and not muscular action only, but all kinds of change and wearing down of the body, cause a consumption of oxygen. A stoppage in the supply of oxygen, therefore, causes death, because it suspends all *change*, which is *life* in the body. As to the change of colour in the red corpuscles, it was once thought that the mere union of carbonic acid gas with the red contents of the cells deepened the colour. But carbonic acid has in general no such power, and it is now generally considered that the change of colour arises from a change of form in the cells. It is found that when carbonic acid is added to blood, the cells become swelled out, and rounder. This form affects the light which passes through them, and hence they appear darker.

For the history of these cells we must examine the history of the blood itself. The blood is of course formed from the food which the body receives at intervals. In the stomach the food is reduced to a pulp, and various juices are mixed with it, and different chemical combinations take place in it. In the intestines the same kind of action is continued, and all that is really nutritious in the food is absorbed as a fine milky fluid by innumerable cells which line the coats of the intestines. In them it begins to be organised, and is passed on from them in thread-like vessels which afterwards unite into larger ones. These vessels are called the *Lymphatic System*, and they empty themselves at last by one great channel into one of the great veins. But before doing so there is much winding and interlacing, and especially do the different lymphatic

vessels meet in knots or centres, which appear to perform an important office. For all the while, the milky fluid is becoming more and more elaborated, and, especially, cells are beginning to appear, which seem to have their origin in these knots or unions of the lymphatics. The cells or corpuscles are colourless, but have inside themselves distinct little atoms which are in active motion, and at last, as some believe, break their parent cell and become the little red corpuscles of the blood.

Thus a constant stream of these little cells is being poured into the blood, and others, again, are dying, dissolving away in the blood, after performing their work.

R. McW.

THE NERVOUS SYSTEM.

or-gan-i-sa'-tion (Gr. organon), <i>construction with parts or organs</i>	con'-sti-tute (L. constituo), <i>to establish, to make</i>
ec-cen'-tric (L. ex, centrum), <i>irregular</i>	in-tel'-li-gence (L. intelligo), <i>notice, skill</i>
in-di-cate (L. indico), <i>to show</i>	con-vul'-sions (L. convello), <i>violent motions</i>
man-i-fes-ta'-tion (L. manifestus), <i>discovery, a showing</i>	re-spon'-sive (L. respondeo), <i>answering, making reply</i>
sen-si-bil'-i-ty (L. sentio), <i>acute or delicate feeling</i>	phe-nom'-e-na (Gr. phaino), <i>remarkable appearances</i>
dif-fus'-ed (L. diffundo), <i>poured out, spread abroad</i>	con'-sci-ous-ness (L. conscius), <i>the perception of what passes in one's own mind</i>

MAN being the head and crown of nature, exhibits even in his bodily organization a wonderful perfection; yet, a perfection of which the germs and rude beginnings are to be traced, even in the lowest animals. Among all his lordly gifts, reason is the highest. By this he is capable of religion and a communion with heaven; and it has been well said, 'Man is the eye which nature lifts up to God.'

Yet this noble gift of reason depends on conditions

of bodily organization, for it may be impaired or destroyed by injuries to the brain.

Some eccentric philosophers have pretended to indicate the precise spot where the soul of man dwells within the brain. But it is clear beyond doubt, that some portions of the brain are especially the seat of memory and reason; for if these parts are injured or destroyed, memory and reason cease, though the body may continue for a time to carry on a kind of half life.

But before speaking of this, it will be well to glance rapidly at the manifestation of nervous sensibility and power throughout the animal kingdom. The lowest of all animals, such as sponges, have no nervous system whatever. Neither have jelly-fish, and such like; though some have suspected there may be a kind of nervous sensibility *diffused* through the mass which constitutes their bodies.

A little higher in the scale of life there is a creature whose body consists simply of a bag, at the bottom of which is the stomach. Two little holes in the bag, side by side, afford entrance and exit to the stream of water which supplies it with food. Between these two holes is a single tiny mass of nervous matter called a nervous centre or *ganglion*.

From this ganglion two sets of nerves branch out—one reaching to the tufts of *feelers* which surround the entrance, the other set extending to all parts of the surface of the bag. Should anything of an injurious nature enter the bag, the first set of nerves at once conveys intelligence to the ganglion; the second set is then excited, the bag is thrown into convulsions, and the hurtful thing is ejected.

Now here we see the simplest form of the sense of touch. Our own spinal cord, and that of all the higher animals, is made up of a great chain of ganglia similar to the single one which this little creature

possesses. From these centres or ganglia two sets of nerves branch out, one set conveying impressions from all parts of the body to the centres; the other conveying impressions outward, and exciting different movements and actions.

There is not the slightest reason to believe that the little animal of which we have spoken is at all *aware* of this nervous action, or that it is any more *conscious* of life than a plant. And many things tend to show that in the higher animals this nervous action, of which the centres are in the spinal cord, is not *necessarily* connected with feeling or consciousness. If a frog's head be cut off, the spinal cord continues for some considerable time to be as responsive as ever to every impression from without. Thus if one leg be pinched, it is drawn up as though it felt pain, though it certainly does not feel any. Similar phenomena have been observed in the case of men whose spinal cord has been so severely injured as to destroy all nervous connection between the head and trunk. And some of the nervous actions in our body are very similar to the convulsive movement of the bag, the one nervous action of the little *Funicata*, of which we have spoken. When any irritating substance touches the inside of the wind-pipe, an impression is conveyed to the nervous centres, and from thence back to the inner surface of the throat, which is thrown into convulsions, without, or even against, our will, until the substance is ejected.

A single ganglion suffices for the *Funicata*, because its life is so simple. Its food, little substances floating in the water, needs scarcely any preparation, and being so abundant, the animal needs not to move about in search of it.

The oyster, whose food is not quite so simple, possesses a second ganglion, situated near the mouth, and ministering to the function of eating. It is the

simple type of our nerves of taste. Other shell-fish of this kind possess also a foot, and therefore have a third or *pedal* ganglia. In all these cases there are nervous cords connecting the different ganglia, and so preserving harmony in their action ; but there is still no consciousness connected with it.

But higher animals, which have many things to avoid and to seek, whose life is altogether more complex, possess organs of special sense. Of these the most universal is sight, then hearing and smelling. Each special sense has its distinct ganglion, and these are massed together in the head or brain. But what is more wonderful, another distinct ganglion or mass of ganglia is added, which becomes the seat of consciousness. Nature then first becomes possessed of an eye, by which it can behold itself, and become aware of its own existence.

In man these ganglia form the greater portion of the brain, and overlies the ganglia of special sense. In the lower animals, they are smaller in proportion, but are perfectly distinct ; and birds, from whose brains these ganglia have been removed, have eaten, and stood, and flown for months, though entirely without consciousness. So wonderful are all the works of nature, and so fearfully wonderful is man !

R. McW.

LIGHT.

ne'-ces-sar-y (L. <i>necessarius</i>), <i>needful, unavoidable</i>	ex-tin'-guish-ed (L. <i>extinguo</i>), <i>put out, destroyed</i>
hap'-pi-ness, <i>good fortune, felicity</i>	lu'-mi-nous (L. <i>lumen</i>), <i>shining, bright</i>
plum'-age (L. <i>pluma</i>), <i>the feathers of a bird</i>	il-lu'-mi-na-ted (L. <i>illumino</i>), <i>enlightened</i>
gor'-geous (Fr. <i>gorge</i>), <i>splendid, showy</i>	vi-bra'-tion (L. <i>vibro</i>), <i>the act of moving backwards and forwards</i>
re-flect'-ed (L. <i>reflecto</i>), <i>bent or thrown back</i>	re-frac'-tion (L. <i>refringo</i>), <i>deviation of a ray of light</i>
fo'-cus (L.) <i>a point where rays of light meet</i>	de'-com-pose (L. <i>de, compono</i>), <i>to separate the parts of which a thing is made up</i>

WHAT a beautiful thing is light! It seems necessary to the happiness and well-being of nearly every living thing. Without it we should not be able to tell one thing from another, except by touch, and we should have no knowledge whatever of the beauty of form and colour. Cover a plant with a flower-pot, or bury it in a dark cellar, and see how soon it will become pale and sickly, and die, keep it as warm as you may. In the Tropics, where the sun is more brilliant than it is in England, the birds have a gayer plumage, and the insects, flowers, and even shells of the ocean, have more gorgeous colours than those of our country.

I look at the sun, a candle, or a glowing coal, and I see them because they give out light which comes in some way to me. Besides these, I see a number of other things, such as houses, trees, people, chairs, tables and the like. The sun goes away, the candle is extinguished, the coal is burnt out, and I see them no longer; but the houses, trees, people, and furniture remain just as they were, though I cannot see them. Let the sun come back, relight the candle, kindle a fresh coal, and all these things may be seen as before. What does this mean? The sun, candle,

and glowing coal give out light of themselves, and are said to be the *source* of light, or *luminous* bodies; but the houses, trees, chairs, and such things, could be seen only when the luminous bodies shone upon them, and illuminated them, or lighted them up; hence these are called *illuminated* bodies.

But what is Light, and how does it come from the candle or other light-giving body to my eye? You will remember that the tremblings or vibrations of a bell are carried along by the air as waves, and received by the nerves of the ear as sound. You will further remember that, in the lesson on heat, we learnt that the particles of every hot body are in a state of vibration, that these vibrations are carried along by the ether to the nerves of our bodies, and we call them heat. Now, there is every reason to believe that when a body such as the sun, a candle, or a ball of iron, gives out light, its particles vibrate much more rapidly, making quicker and shorter waves in the ether than when it is only giving out heat without light. And luminous bodies are said to radiate light as hot bodies radiate heat.

Put an iron ball into boiling water and then hang it up by a string. You will find that, although it is as dark as before, yet it gives out waves or *rays* in all directions, and you can feel this heat with any part of your body as well with your eyes shut as open.

Now put the ball in the fire. It becomes first of a dull red colour and presently white hot, so as to light up the room. You hang it up, and you feel the heat as before with your eyes closed. But neither your hand nor your face can tell you that the ball is red or white; it is the eye alone which can let you know that the ball gives out light.

If my eye be turned *directly* towards a candle, that is, directly in the path of the light wave

coming towards me from the candle, I shall see it, but not otherwise. If you take a long straight tin or paper tube, put one end to your eye and turn the other directly towards the sun or any other object, you will see that object, that is, a wave of light will come along the tube to your eye; but if you turn the tube some other way, or use a crooked tube, the object will no longer be in sight. Hence we learn that waves or rays of light travel in *straight lines*, and so we cannot see round a corner.

Again, a candle is burning on the table. I turn my eyes in that direction, and I see it. I hold a piece of window-glass before my eyes and see the candle nearly, if not quite, as well as before. But if I put my hand, or hold a piece of board or bright tin plate before my eyes, the light of the candle will no longer come to me. How is this? The glass in some way lets the waves of light pass through it, but the other substances stop them. Those things, such as glass, which let light pass through them are called *transparent*.

But what becomes of the light which was stopped by the hand, board, or tin plate? I must refer you to the lesson on heat, where we find that some substances reflect, and others absorb, more or less of the heat which falls upon them, and the brightest substances reflect best. So it is with regard to light.

There is a looking-glass on the table and a candle burning directly before it. If you go behind the glass and try to see the candle through it, you will not succeed, for the light does not pass through the metal coat at the back. But if you go behind the candle and look towards the glass you will not see the candle, but a bright image of it, as far behind the glass, apparently, as the candle is before it. If the candle be now removed a little to the right, you will have to go as much to the left before you will

see its image. I think you will readily see that the light of the candle falling on the glass which it could not get through was *reflected* to your eye, thus enabling you to see its image. In this way you see images or reflections of your own face, trees, houses, and clouds, in clear still water. You will see that the bright tin will reflect light, too, but the board will give no image of the candle; you will simply see the board itself by means of the light which falls upon it from the candle. In the same way we see all other illuminated objects.

Every boy and girl knows what a burning-glass, or lens, as it is called, is. You have probably amused yourself with burning your playfellow's hand or holes in pieces of paper by means of the sun's heat. You know such a glass is thick in the middle and thin round the rim. And you have to exercise a little patience before you can get the glass at the burning distance from your hand. Now you have a bright spot of light and great heat, but all round the spot it is comparatively dark. If the glass were quite flat there would be no bright spot, but the whole space under the glass would be equally light. What, then, is the cause of the hot bright spot? Sunlight falls upon the whole of the lens, but being thick in the middle, the rays are turned or bent inwards till they meet altogether into one place called the *focus*, where they form this bright spot, which is really a small image of the sun. You may get an image of a candle flame on a card, and it will be upside down as is that of the sun, but there will be very little heat. This bending of light is called *refraction*.

Not only glass, but water and other transparent substances, bend or refract light when it falls *slantingly* upon them. If you put a stick slantingly into a pail of water you will see, as you must have done

many times, that the stick appears broken just at the surface of the water, and that the part in the water appears to rise upwards. But if you hold the stick upright it will not appear bent in this way. Even the air itself refracts light when it passes through it slantingly; thus we see light from the sun after he is gone below the hills. His rays slant into the air, which bend them down to our eye.

You have, probably, many times seen wedge-shaped pieces of glass hanging as ornaments from a lamp, and have wondered at the beautiful colours seen through them. If you take such a piece of glass, called, from its form, a *prism*, and hold it with one edge upwards between the sun and the wall, the rays of light from the sun which fall upon one side of the prism will, in passing through, be refracted downwards towards the thick part of the prism. And they will not only be bent, but they will also be separated or *dispersed*, as it is called, and a broad band of light of different colours will be seen on the opposite wall. The lowest of the colours will be red, the next orange, then yellow, green, blue, purple, violet. Rain-drops, like little prisms, decompose rays of light in the same way, forming the splendid colours of the rainbow. As high sounds are caused by quick vibrations of the air, and low notes by slower vibrations, so it is believed that the different colours are caused by the different rates of vibrations of the ether, violet being produced by vibrations nearly twice as rapid as those which produce red, so that different colours in light are somewhat like different sounds in music.

You will not forget that a sound wave travels about a mile in five seconds. A light wave is found to travel nearly 200,000 miles in a second, a rate utterly beyond our power to comprehend.

H. T.

WATER SUPPLY.

con'-gre-ga-ted (L. congre-g-o), <i>collected together</i>	ex-tra'-ne-ous (L. extra), <i>foreign</i>
hi-er-o-glyph'-ic (Gr. hieros, glu-pho), <i>a symbolical character</i>	per-cep'-ti-ble (L. percipio), <i>having the power of perceiving</i>
hy-draul'-ic (Gr. hudor, aulos), <i>relating to the conveyance of water through pipes</i>	ob-jec'-tion-a-ble (L. objicio), <i>liable to objection</i>
a-ër-ate (Gr. aër), <i>to force air into a substance</i>	sa-line' (L. sal), <i>consisting of or containing salt</i>
	a'-que-duct (L. aqua, duco), <i>an artificial channel for water</i>

HAVE you ever considered how important it is to the dwellers in large cities that they should have a plentiful supply of pure wholesome water? Have you ever thought what would be the consequences to any large town if for a lengthened period the water now pouring freely into all the houses was withheld? Perhaps very few of you have ever considered these points; and yet how necessary to our comfort, to our cleanliness, to our means of travelling, in the present day; to the numerous manufacturing processes carried on among us, and even to our very existence itself, is an adequate supply of pure water! When people live in country places, where they are thinly and widely distributed, they are obliged to depend entirely for their supply upon whatever sources are at hand—to dig wells, which often dry up; to draw from the river flowing through their neighbourhood; and in some places to depend upon the pond, from which the supply for the cattle and for all other purposes is drawn.

As we may imagine, the rulers of men in all ages, when governing large bodies of people congregated together in cities, have had to turn their earliest attention to procuring a plentiful and constant supply of that fluid which is indispensable to the comfort and well-being of those whom they govern; and we may always judge of the character of a nation by

the quantity of water supplied, and the means employed of supplying it to the inhabitants. It is not, however, till the time of the Roman Empire that we find any complete and elaborate water systems carried out. From the records of Holy Writ and from the hieroglyphics of the Egyptians, we may imagine that the water was conducted from the various rivers by canals, and stored in tanks &c., or that wells were dug outside the cities, from which water was drawn by the balance-pole as used in our market-gardens of the present day. But the Romans undertook the most gigantic works for conducting water from long distances and from great heights into their cities; the supply to the people of Rome, according to one historian, being about 332 gallons for each person per day. But no doubt the greater part of this was supplied to the various baths, gardens, and theatres, existing in the city. The ruins of many of these gigantic aqueducts still remain, and from them our modern hydraulic engineers have learnt many lessons in their art.

In providing a supply of water to a modern city, the first consideration must be, whence a continual supply is to be obtained, and whether that supply is likely to be permanent and sufficient for all the present and future wants of the inhabitants. Rivers, lakes, springs, and rainfalls, all supply sources from which water may be drawn. The inhabitants themselves find it advantageous to make ample provision for the collection of the rain-water, and also for excluding from it all extraneous matters, as dead leaves, mortar from the house-tops, and the many other mechanical impurities which find their way into it.

The next consideration with regard to supply is the quality of the water obtainable, and here great diversity of opinion prevails as to the qualities necessary for a pure and wholesome water. The qualities

required in the water supplied to any town are thus given in a French work : ' It should be fresh, limpid, and without smell ; its flavour should be hardly perceptible, neither disagreeable, flat, brackish, nor sweet ; it should contain little foreign matter, but a sufficient quantity of air in solution ; it should dissolve soap without leaving curds, and should cook vegetables easily.' However, so long as there is no thoroughly objectionable quality in the water, motives of economy will generally cause the nearest source of supply to be taken. There are several kinds of impurities found in water, which may be classed as Mechanical, Saline, and Organic. The first of these consist mainly of mineral substances, not in general hurtful, but which should be filtered out of the water before drinking. Saline impurities impart the property of hardness to water, and render it unfit for cleaning purposes ; while the Organic impurities may be classed as of vegetable and animal origin ; the last of which is indeed injurious to the human system, for where water containing organic impurities is drunk in large quantities, these diseases of the intestines will be sure to prevail. Another hurtful agent to water is lead, which unfortunately is decomposed by distilled water more readily than by hard water, so that, whenever possible, lead pipes for conveying water into dwelling-houses should be avoided.

Some have thought that the nearer we can obtain water the better it would be ; but this does not appear to be absolutely true, for there are many impurities which water will part with in flowing for a long distance in an open channel, provided always that it is not contaminated by any impurities washed down from the highlands in its course. By flowing from a long distance over a gravelly bed all earthy impurities are also removed ; but still it is as well

to follow the example of the Romans in the construction of their aqueducts, and when water has to be conveyed from long distances, to cover the channels as far as possible, providing free access of air to the water here and there. The use of this exposure to the air is well exemplified by the means adopted for purifying water taken to sea in closed barrels or cisterns; for the water so carried soon becomes absolutely foul and stinking, but by removing the head of the cask, exposing it to the air, and shaking well now and then, it soon becomes as pure as ever. Water supplied from wells is very often impure owing to its becoming stagnant. This also is the objection to that drawn from ponds and reservoirs of all kinds, where the water cannot be well filtered and aerated before being supplied to the population. Another objection to the supply of towns being taken from wells is, that very seldom can a supply be obtained from these sources sufficient for a large town. The sources of wells are easily diverted, and their waters often suffer by the infiltration of impurities from cesspools and drains. In consequence of this, constant sources are sought—often at a long distance from the centre where the supply is to be delivered—and the water brought, either by open cuttings or by closed subways, to large reservoirs, where it is filtered before entering the pipes which convey it to the houses of the inhabitants.

These constant sources are very often supplied by rivers, the water being taken at such a distance from the town that there is no fear of the impurities from the sewers affecting it; or large reservoirs are constructed in which the water from the surrounding hills in the rainy seasons is stored up for distribution in the dry; and the quality of this water is greatly affected by the nature of the surface over which it

flows. Agricultural and peaty soils are most injurious, filling the water with organic impurities. However and wherever the supply may be procured, it is generally filtered in the present day by being made to pass through layers of sand and gravel, and then, being collected in reservoirs, is jealously guarded against the action of all injurious agents, till it is pumped into the large pipes, called distributing mains. As the water has to be raised to the rooms of the highest houses, enormous steam power is used in supplying London and other large towns, but in some places they are still dependent upon procuring a plentiful supply from springs at such a height above the surrounding country, that by the force of gravitation the water will be raised to the required height.

In laying the pipes for conveying the water from the mains to the various parts of a city, many precautions have to be observed, e.g. the pipes must be laid a sufficient distance in the earth to protect them from the frost. In England this is about four feet, but in Russia they have to be placed six or seven feet deep. The lengthening of the pipes by increase of temperature must also be taken into account, as must also the diminution of their bore by the various deposits on their interior, according to the character of the water flowing through them. The water thus conveyed to our houses is generally stored in cisterns, and the supply regulated by float-valves of various kinds, the most common being the ball-cock. The cistern is also provided with a waste-pipe to conduct into the drains any overflow consequent upon a derangement of the valve. Great care should be taken with these cisterns, to see that they are in proper order, that there is no connexion between the cistern from which the drinking supply is obtained and the

drains or cesspools, and to see that they are covered over, so that impurities, soot, dead leaves, &c., may not gain entrance.

C. J. C.

PREVENTION OF DISEASE.

mit'-i-ga-tion (L. mitigo), *temper-
ing, softening*
pre'-ma-ture (L. præ, maturus),
too early, too hasty
phys-i-ol'-o-gy (Gr. phusis, logos),
*the science which treats of the
functions of animals and plants*
re-ple'-tion (L. repleo), *the state
of being too full*
ep-i-dem'-ic (Gr. epi, demos), *af-
fecting great numbers of people*
mas'-ti-cate (L. mastico), *to chew*

in-spi-ra'-tion (L. inspiro), *the
act of breathing into*
del-e-te'-ri-ous (L. deleo), *deadly,
destructive*
ex-pi-ra'-tion (L. exspiro), *the
act of breathing out*
res-pi-ra'-tion (L. respiro), *the act
of breathing in and out*
pre-dom'-i-na-tion (L. præ, domi-
nor), *ruling over, prevailing,
being superior*

ALTHOUGH it is utterly impossible to say that there is any disease to which man is liable which the utmost precaution can ward off with unerring certainty, we may do much, and ought to do all that lies in our power, leaving the result with God. There are many diseases which we can ward off with tolerable certainty, and others whose severity we can certainly mitigate should they come upon us.

And here I would press upon all the benefit and enjoyment to be derived from the study of physiology.

No one can have any conception of the delicate and constant attention which the mechanism in the machine which he calls his body requires without knowing something of the structure of those parts which are constantly carrying out the functions which we designate by the names of digestion, circulation, respiration, and absorption.

When the food we take into our mouths has been properly masticated, it is passed into the stomach,

there to be digested, or dissolved by the action of a certain juice, called the gastric juice. This dissolved food then, under the name of chyme, passes into the intestines, where certain other juices from the liver and pancreas pour into it, complete its dissolution, and convert it into a milky fluid, known as chyle. This chyle is absorbed or taken up by a set of vessels called lacteals, and, being collected into one large vessel, is poured into the heart. But at this stage it is in a very impure state, containing certain gases and other matters which would be injurious to the system, and it is also deficient in the life-giving gas called oxygen. It is therefore necessary to purify it. For this purpose the heart pumps it into the lungs, which are bundles of air-sacs clustering round the bronchial tubes which branch off from the wind-pipe, down which, through the opening of the mouth, owing to the action of inspiration, a constant supply of fresh air passes; the deleterious gases, &c., being carried off by the action of expiration. These two actions together constitute what is called respiration. Over the surface of each of these air-sacs the impure blood is carried, imparting, as we have said, its impurities to the air expired from the body; at the same time taking in the life-giving oxygen to be taken back to the heart, and thence conveyed through the numerous arteries of the body to the remotest corners of the system, to build up, renovate, and keep in repair all the muscles, tissues, membranes, and secretions necessary to the well-being of the animal, and indeed of the mental life.

Upon consideration, we shall find that the laws of health have to do both with the nature of the food we eat, and the quantity we eat at one time. They have also to do with the quantity, quality, and nature of the air we breathe, with the exercise we take,

with our manner of life generally; and last, though not least, with our cleanliness. As to our food, there are certain kinds of food which, taken into the stomach, are easily digested or dissolved by the gastric juice secreted by the membranes of that organ; and others which are hard of digestion, and therefore throw extra work on the stomach, irritating it, deranging its organs, and being a very fertile source of many of the derangements which lead to permanent disease. Then, again, the stomach can digest but a certain amount of food at a time, viz. that which is in contact with its sides. If too much is taken, therefore, at a meal, the surplus serves but to irritate and derange, and passes into the intestines in an undigested state. Again, the stomach does its work with regularity; meals should therefore be taken at regular intervals, and long fasting or frequent repletion avoided, since both causes tend to weaken the digestive powers. A mixed diet is most suitable for our variable climate, but animal food may be used more abundantly in cold weather, and vegetable food in hot.

Fresh and good air also is necessary to the proper preservation of the animal life, for an adult person in the course of every minute requires a cubic foot of air for respiration, and the same air cannot safely be taken into the lungs more than four times, as every respiration deprives the air of its vital principle, viz. the oxygen contained in it, leaving nothing behind it but the deadly poison, carbonic acid gas. People who frequent crowded assemblies or heated rooms complain of head-ache, langour, &c., all occasioned by the vitiated atmosphere which they are constantly breathing, its poisonous effects being carried into the blood through the lungs, and sowing the seeds and germs of many diseases. One of the most efficient means, then, of warding off

disease is to obtain at all times an adequate supply of refreshing, life-giving, pure air, to see that what we are constantly taking into our lungs is not vitiated by the foul vapours from cesspools, stagnant water, drains, or the like.

Many people boast that they are as well without exercise as with it, and so lead a sedentary or a dissipated life, till nature vindicates her rights, health fails, and many diseases follow. Proper exercise must be taken to keep up the warmth of the body, and to keep the blood freely circulating through all parts.

Then, lastly, how ignorant people are of the assistance cleanliness is to nature in warding off disease! For the skin is a delicate and beautiful membrane, full of pores and secreting glands, and through it a great part of the refuse of the body is carried off. If this be not cleared away, the perspiration cannot make its way through the clogged pores, and is absorbed again into the blood, always producing more or less disease. We must, then, if we want to preserve our health, and enjoy it while we have it, be regular and abstemious in our eating; take regular and sufficient exercise; see that the air we breathe is fresh and pure, and pay constant attention to the cleanliness of our bodies.

But notwithstanding all the precautions we may take, and all the rules we may observe, illness and disease may come upon us, because there are some diseases which are hereditary, or pass from parent to child, such as consumption; and there are others which are called contagious, i.e. disseminated by contact or touch, or through the articles used by the patient; others called infectious, i.e. propagated by the air.

Among contagious diseases are erysipelas, itch, ring-worm, &c. Of the second class are measles, chicken-pox, scarlet fever, typhus fever, small-pox.

In the case of contagious diseases, the only way really to avoid them is to use great care not to come in contact with any infected person, or with anything which they have used. But in the case of infectious diseases, owing to particular states of the atmosphere, they are often epidemic, i.e. they spread very rapidly among the population of a town or country, and in this case the great remedial measure is to get as much fresh air about as possible, so as to dilute the poisoned air and separate far apart as it were the seeds of the disease. In the case of one infectious disease, viz. small-pox, we have a remedy provided, which, if it does not give perfect immunity from the disease itself, so mitigates its severity as to reduce the death-rate resulting from its attacks from 1 in 4 to 1 in 450. This remedy is vaccination.

The terrible disease of small-pox was at one time fearfully epidemic in England and in many other countries. But it had long been known that cows were liable to a certain eruption, and that the hands and arms of persons coming in contact with them could take this eruption, which caused a slight fever of the body. It was also noticed that persons having had this cow-pox, as it was called, nearly always had the small-pox, if they had it at all, in a much mitigated form. From this Dr. Jenner introduced the practice of inoculating persons with the cow-pox, and although much opposed at first, the truth of his theory has been so well proved, that a law has been passed compelling people to have their children vaccinated before they are three months old. The result is that in countries where vaccination has been faithfully and rigorously carried out, small-pox has become almost unknown. But unhappily, owing to the evil effects which have occurred in some instances from the improper performance of vaccination,

many persons resist the law, and rather pay the penalty than have their children vaccinated. If, however, they were better informed, they would never neglect so valuable a preventive, for that it is one all experience has proved. The chief things necessary to observe, in order to derive the full benefit of vaccination, are:—

1st. That no other disease should be upon the person at the time of vaccination, and that he should avoid taking cold.

2nd. The lymph must be taken from a common cow-pock vesicle at the right time, i.e. between the fifth and tenth days, and it is best that it should be direct from the arm of another person. If an eruption comes out upon the skin after vaccination, it only shows that the person is of full habit, has a delicate skin, and that the cow-pox has taken strong hold of the system. When the disease is epidemic, i.e. very prevalent, re-vaccination is an additional safeguard.

In conclusion, it must be urged that when any infectious disease is in the air, all should endeavour to take proper precautions to keep the mind as free from anxiety as possible, and to place a firm trust in an overruling Providence, in whose hands alone are the issues of life and death.

C. J. C.

HEAT APPLIED TO DOMESTIC ECONOMY.

do-mes'-tic (L. domus), <i>belonging to the house</i>	prop-a-ga'-tion (L. propago), <i>to spread, to extend</i>
e-con'-o-my (Gr. oikos, nomos), <i>arrangement, regulation</i>	sub'-sti-tute (L. substituo), <i>to put in place of another</i>
in-flam'-ma-ble (L. in, flamma), <i>easily set on fire</i>	con-stit'-u-ent (L. constituo), <i>one part of a compound</i>
e-volve' (L. evolvo), <i>to unfold, to expand</i>	re-fer' (L. refero), <i>to allude</i>
ex'-pe-dite (L. expedio), <i>to hasten</i>	pro-duce' (L. produco), <i>to bring forth, to lengthen</i>

HEAT may be produced in several ways, but the most common, and the one which will concern you most, is by the combustion of inflammable material, such as wood and coal. The amount of heat evolved by the burning of these bodies will depend upon the amount of oxygen supplied to the burning mass, for the greater the amount of oxygen the greater the amount of heat. Now, as one of the constituents of air is oxygen, you will see at once the necessity for a current of air to pass into the fire.

But heat can be produced in other ways than by combustion. One of these may concern you, and so I shall mention it.

If you rub a brass button on a piece of wood, you will perceive that it gets warm, and the harder you press, and the quicker you rub, the hotter the button becomes. In this case the heat has been produced by *friction*, and the amount of heat depends upon the amount of friction; if, therefore, you reduce the latter, you will reduce the former also. If you ever possess a sewing machine, you may turn this knowledge to a useful purpose. Certain parts of the machine must, when in use, rub together. Here is friction; take care, therefore, to lessen the amount of friction as much as possible. And this you can do

by keeping the machine clean, and by oiling all the bearings before you commence working it.

In whatever way heat is produced, when it is evolved it is subject to certain laws and possesses certain properties, the knowledge of which may be of great use to you in your domestic affairs, and so I will mention some and show their application.

If you place a piece of iron wire in the flame of a candle, you will find that the heat from the flame passes along the metal, and will at last reach your fingers. In this case the heat of the flame has been conducted from one particle of matter to another, the two having been brought into actual contact. This is called the *conduction* of heat. If you substitute a piece of wood for the metal, you will find that very little heat passes along it; and so with a piece of glass or ivory. You see, then, that all bodies do not conduct heat in the same degree. Those substances which allow the heat to pass along readily, such as the metals, are called good conductors; and those which do not allow the heat to pass readily are called bad conductors. Light and porous substances, as wood and liquids, are of this class; while those substances which do not allow the heat to pass at all are called non-conductors. Glass, wool, and feathers are among these.

The knowledge of these facts may be of great use to you in daily life. If you wish to keep anything warm, place it in a metal vessel, and place it on the heated plate of the stove. When you purchase a tea-pot, buy one which has a wooden handle, or which has the metal handle separated from the body of the pot by pieces of glass or ivory. When you require to purchase any winter garments, choose those which, if not entirely, are mainly composed of wool. Think more of usefulness and comfort than of mere outward appearance.

If you put some water in a glass flask—a Florence oil-flask will do—and place it over the flame of a spirit lamp, you will notice that as the particles of water get hot they rise, while the colder ones fall, and at last the whole mass of water will boil. In this case the heated particles have been *conveyed* from one part of the water to another. This is called the *convection* of heat. It is a very important subject, and one which bears more closely on our home comforts than most people imagine. The knowledge of this law would save many a shovelful of coal, and spare many a servant a scolding. You will see this when I explain to you an experiment which I have often performed. I will ask you to imagine it done again. Here is a small glass vessel; I will fill it half full of water; next I will fasten a piece of ice to this stone, and place it at the bottom of the water. Then I will slant the tube, and apply the flame of the spirit lamp to the upper part, so that the heat shall reach the top of the water first. After a while you will see the water at the top boiling, and yet the piece of ice at the bottom has not melted. How is this? The particles of water when heated are lighter than the cold ones. They cannot therefore pass to the bottom of the tube; in other words, the heat is not conveyed downwards. As water is a bad conductor of heat it will be a long time before the whole of the water is made hot by conduction.

You may apply this law to the boiling of water for breakfast. If you wish that operation to be performed quickly, see that the fire is so laid that the flames from the burning wood and coal can play upon the whole of the bottom of the kettle as soon as the fire is lighted. You will remember that at home your mother always sees that there is a hole left in the centre of the fire when it is laid; and through this the flame rushes like a little furnace. Take

care also to keep the kettle from standing on the coals, as coal is a non-conductor of heat, and therefore prevents the heat of the fire from reaching the water. It will still further expedite the boiling of the water if you keep the kettle from being coated with soot.

I have a few more facts to refer to, but must leave them until my next lesson. J. H.

HEAT APPLIED TO DOMESTIC ECONOMY

(continued).

im-port'-ance (L. importo) <i>con-</i> <i>sequence</i>	tem'-pe-ra-ture (L. tempero), <i>state</i> <i>as regards heat or cold</i>
pos'-si-ble (L. posse), <i>that may be</i> <i>done</i>	con-sid'-er-ab-ly (L. considero), <i>in</i> <i>a great degree</i>
fa-cil'-i-ty (L. facilis), <i>easiness</i>	ex-pand' (L. expando), <i>to spread,</i> <i>to lay open</i>
re-flect' (L. reflecto), <i>to bend or</i> <i>throw back</i>	con-tract' (L. contraho), <i>to</i> <i>draw together, to lessen</i>
ap-plic-a'-tion (L. applico), <i>the</i> <i>act of applying</i>	grad'-u-al-ly (L. gradus), <i>by de-</i> <i>grees</i>

If you place your hand in front of a heated body, you will feel the heat passing from it to your hand; and you will find that the heat passes from all parts of its surface equally. In this case the heat is not conducted through the particles of any solid material, neither is it conveyed as in the case of water, but simply passes away in lines called rays, and this is called the *radiation* of heat.

But all surfaces do not radiate heat in the same degree. Black, dull surfaces radiate twice as much as bright ones, and all black surfaces more than white ones. Hence, you see that water in a black tea-pot will cool much faster than in a bright one. As a matter of fact, the former will get cold in

half the time of the latter. Here, then, you see the importance of keeping the surfaces of all your pots and pans as bright as possible, so as to lessen the amount of radiation.

What has just been said refers to the passing away of the rays of heat ; but the rays will pass into another body that is cool, as well as pass from a body which is heated. Thus, if I place a vessel of water in front of the fire, after a time I shall find the water will be warm. When the rays of heat do pass into another body, they are said to be absorbed ; and the act of taking them in is called the *absorption* of heat. All bodies, however, do not absorb heat with equal facility. Black and dull surfaces absorb heat much more readily than light and shining ones. When the rays of heat touch the bright or white surfaces, they are thrown back again ; and the heat is said to be *reflected*. You may regard it as a general truth that good radiators are also good absorbers, and bad radiators are good reflectors.

The application of these laws to the affairs of domestic life is of great importance. I will name a few of them.

Suppose you want to keep some tea warm, and cannot put your tea-pot in any other place to receive the heat of the fire than in the front, then remember that a black pot is better than a bright one. The black absorbs the heat more readily ; but then if you take it away from the fire, it will cool rapidly, because black is a good radiator. Again, if you wish to cook some meat in an American oven, see that the whole of the inside is kept bright ; then, as the rays of heat fall upon the bright metal, they will be thrown back upon the meat, and the joint will get cooked more quickly than if the surfaces are dull.

Should your bedroom be at the top of the house, and the roof be slated, ask your landlord to lime-

wash the slates, and then when the sun's rays fall upon them, they will be reflected, the slates kept cool, and the temperature of the room reduced considerably. The knowledge of these laws should be applied in the choice of clothes. Unless compelled by circumstances, I should advise you not to wear black, because it absorbs the rays of the sun in the day-time, and radiates the heat from the body in the evening. Red radiates less than black, though more than white. There is just one other point I must notice in this lesson. It is a fact that all bodies expand by heat, and contract with cold. Water above the temperature of 40° Fahr. expands $\frac{1}{2}$ th of its bulk in reaching the boiling point. You must take care, then, never to fill your kettle quite full. If you do, when it reaches the boiling point, the water will run over.

Thick glass tumblers when made suddenly hot in the inside, expand, and as glass is a bad conductor of heat, they crack. Always heat them gradually, and if at any time you have a stopper in a bottle which you cannot get out, don't knock it, but place the neck in hot water. This will expand the neck of the bottle, and the stopper will be easily removed. But you must not heat it too much, for if you do the stopper will expand as well as the neck, and fit as tightly as before. Through ignorance of this fact many a decanter has been broken.

When water cools below 40°, it does not contract as other bodies do, but expands until it reaches the freezing point, 32°. This is why ice is lighter than water, and so floats on the surface, and this is why our ponds, lakes, and rivers, are not frozen solid. This law has an application to the affairs of life. As winter approaches, bear in mind that the water in the pipes will expand as the weather gets colder, and if it freezes, it will expand sufficiently to crack the

pipe, and then when the thaw sets in you will be flooded with water. See, then, that all the pipes which are exposed to the weather are covered with straw, old carpets, or other non-conductors of heat, and if the frost is very severe, turn your water taps on a little before you go to bed. This may save your pipes, because flowing water does not readily freeze.

J. H.

NURSING THE SICK.

man'-age-ment (Fr. <i>menager</i>)	ad-just' (L. <i>ad, jus</i>), to put in order
conduct, administration	ap-proach' (L. <i>ad, proximus</i>), to draw near
ef-fect'-ive (L. <i>efficio</i>), operative, active, able	ab-rupt'-ly (L. <i>abrampo</i>), suddenly, hastily
cus'-tom-ar-y (L. <i>consuesco</i>), according to custom	re-fresh' to revive
ben'-e-fit (L. <i>benefacio</i>), kindness, advantage	ex-haus'-tion (L. <i>exhaurio</i>), the act of exhausting
sympt'-om (Gr. <i>symptoma</i>), a sign, an indication	ad-her'-ence (L. <i>adhaereo</i>), a sticking to
fre'-quent-ly (L. <i>frequens</i>), often	

SOME time or other it may fall to the lot of my young readers to have charge of a sick-room, and therefore a few hints concerning the management of it will not altogether be out of place. In London there is an institution for specially training young women to be good and effective nurses, and now when severe sickness overtakes a member of a well-to-do or wealthy household, it is becoming customary to send for one of these women to come and assist in giving the care and attention that the poor patient stands in such need of. And in some towns, through the kindness of benevolent ladies, nurses are paid to reside, and in case of any serious illness among the poor, they are required to visit the houses pretty

constantly, and to give the people who wait on the sufferers the benefit of their knowledge and experience. Now this is very excellent indeed, but it may so happen that some of my readers, when sickness overtakes their friends, may not be just in the way of this blessing; so I would have them all pay heed to and treasure up the few hints I shall here offer.

As soon as ever there are symptoms of severe sickness, call in a doctor, and let his advice be most strictly followed up.

Keep the poor sufferer as quiet as possible; allow nobody in the room except the familiar members of the household, and then never more than one at a time.

Permit no noise or loud talking where the patient can hear. Let the sick-room be clean and well-aired, and remove all plants and substances which give out a strong smell. Arrange the medicine bottles carefully, so that no mistakes may occur. Very gently but frequently adjust the pillows, and make the bed comfortable.

Avoid wearing creaking shoes and rustling garments; tread softly but firmly, so that the patient may never be startled by your approach. Remove bed-hangings, and keep, by means of blinds, a nice, soft, subdued light in the room. Always preserve a kindly soothing manner and tone of voice, and a cheerful countenance. Be particular to keep the doctor well-informed of every change in the patient, whether good or bad. See that the diet he orders is carefully prepared and regularly given, and if there be objections on the part of the invalid to take it, try by loving, cheering advice to overrule them. Keep strictly to the hours for the medicine, except indeed the patient be asleep, in which case never hastily or abruptly arouse him.

In summer, let the room be cool and pleasant by

means of a draught of air, either through a window opened at the top or by the removal of a pane of glass from the upper sash. In the winter, keep it comfortably warm with fire, which will also assist the ventilation.

Take away all basins, spoons, and glasses as soon as they are done with, and let them be carefully washed before being used again. By means of a sponge, refresh the patient by washing his face and hands with a little vinegar mixed with slightly warm water. Take away all remnants of food, and if cold water be the principal drink, fetch it frequently, fresh-drawn, from the spring or pump. Never allow exhaustion to set in from want of nourishment. Watch carefully for the times when more food is to be given, and if only one or two kinds are permitted, vary them. Say beef-tea this hour, arrow-root the next, some preparation of milk the next, then beef-tea again, and so on.

Avoid gloomy conversation, both with and before the patient. Aim at a hopeful spirit, and infuse as much as you can of it into the sufferer. Prevent the banging of doors and creaking of hinges, and if the patient be inclined to sleep, encourage it by perfect quiet.

Never leave the sick-room for long together, unless indeed somebody else is in charge, and during the weary night-watch strive to be as wakeful and attentive as possible.

Remember, too, that in all cases of sickness the nurse is as important as the doctor; nay, if possible, even more so. She is so continually with the patient, and so much depends upon her careful watching and strict adherence to all the orders and regulations made by him, that if she fail in her duty, she thereby renders his aid ineffectual. Before entering upon the extremely onerous duties of sick nurse, earnestly decide

to fulfil with the strictest conscientiousness every duty you may have to perform, and every trust that shall be reposed in you. M. R.

SOAP.

op-er-a'-tion (L. opus), <i>agency, action</i>	re-quire' (L. requiro), <i>to demand, to need</i>
fil'-ter (L. filum), <i>to strain</i>	con-sis'-ten-cy (L. consisto), <i>substance, degree of thickness</i>
ex-tract' (L. ex-traho), <i>to draw out</i>	dis-solve' (L. dissolvo), <i>to melt</i>
pleas'-an-ter (L. placeo), <i>more agreeable</i>	sep'-a-rate (L. separo), <i>to divide, to part</i>
in-crease' (L. incresco), <i>to grow, to make or grow greater</i>	gly-cer-ine (Gr. glukus) <i>a sweet, oily substance</i>

THE use of soap in washing the body or clothes, and in almost every other cleansing operation, is so common that there is scarcely anyone to whom it is not known. Yet few perhaps ever think of the manner in which this useful article is made, or of what it is composed. We use soap to assist in the removal of grease, yet it is itself made chiefly of oil and tallow. This may appear strange, but we must bear in mind that in the process of soap-making the nature of fat undergoes an entire change. On being mixed with soda and boiled, it loses its greasy qualities, and is converted into soap and glycerine, the latter being purer in substance even than the former. However great the cleansing properties of soap may be, it would be of no service in washing if it did not dissolve easily in water. There is some soap which will not so dissolve. Every one knows how much pleasanter it is to wash in rain or soft water, as it is called, than in spring or hard water. But most of the water used in London and other large towns is hard; to wash in it without soap is almost impossible, and if we use soap, instead of forming a lather, it seems to rise to the top of the water in a sort of greish

curd, which neither dissolves nor assists in cleansing. In fact these curds are not the soap first used, but are quite a different sort of soap which is made in the water at the time of washing. The hardness of water is caused by the compounds of lime and other earths, which the rain, in filtering through the ground, or after it has gathered to form a river or spring, has dissolved, and which are contained in the water when it is put to domestic uses, although they are not visible. When we put soap into this hard water, the acids which are in the fatty part of the soap leave the soda with which they have been combined, and seize hold of the lime and other earths dissolved in the water, and thus form a new kind of soap, which will not dissolve but rises to the surface. This new soap does not cleanse, but is itself a kind of dirt, and hence it is much easier and better to wash in soft water than hard.

Common soap is made as follows :—A quantity of quicklime and soda-ash is placed in a large iron vessel or vat, the bottom of which is pierced with holes ; first there is a layer of lime, then a layer of soda-ash, again one of lime, and so on. The vats are next filled up with water, and as it filters through the powdered lime and soda into another vessel placed beneath, a certain portion of the soda is dissolved, while the lime retains parts which are not required. This liquid is then called lye. More water is added to the lime and soda, which trickles through as before, and this process is repeated until all the soda has been dissolved. The lyes thus obtained are of different strengths, and are kept separate ; for, as in the making of tea, that which comes from the first pouring on of the water is the strongest. Near at hand is a large copper or furnace in which a quantity of tallow, oil, and other grease is melted. Some of the weak lye is poured on to the

fat in the copper, and the whole is mixed together and boiled for three or four hours. During this time the acids of the oil and tallow combine with the soda of the lye, forming a slightly solid substance, which, after further boiling, becomes soap. When all the soda has been exhausted from the lye, a little salt is thrown in, to gather the soap to the surface, and the refuse water is then drawn off. Stronger lye is afterwards added to the same fat and boiled, and this process is continued three times a day for about six days, a fresh quantity of soap being formed each time. When the soap has attained a proper consistency or thickness, the fire is allowed to go out, and on becoming cool the soap is removed into wooden frames, where, being exposed to the air, it soon becomes hard. These frames are made of the length of a bar of soap, a number of them being placed one on another, and fastened together, until a deep tank is formed. When the soap has become firm, a wire is passed between each frame to cut the soap into slices of the required thickness, and these slices being again exposed to the air, are cut by a similar process into bars, and are so packed for sale.

The cleansing power of soap is very much increased by putting a little soda in the water, and this is often done when dirt is difficult to remove, as in the scouring of paint on walls and floors. Some kinds of soap are used to cure or prevent diseases. There is also a sort of soap made which will dissolve in salt water, and this, being adapted for washing in the sea, is called marine soap.

S. G.

SOAP (*continued*).

ap-pear'-ance (L. appareo), <i>show, the thing seen</i>	pe-cu'-li-ar-ly (L. peculium), <i>in a distinct or singular way</i>
quan'-ti-ty (L. quantus), <i>a part, a certain weight or measure</i>	ac-quaint', <i>to make familiar with, to inform</i>
qual'-i-ty (L. qualis), <i>nature, property</i>	an'-nu-al-ly (L. annus), <i>happening every year</i>
con'-quer (L. conquæro), <i>to overcome</i>	in-gre'-di-ent (L. ingredior), <i>one part of which a compound is composed</i>
dis-cov'-er (Fr. decouvrir), <i>to reveal, to expose</i>	con-sum'-er (L. consumo), <i>one who consumes</i>
prof'-it-a-ble (L. proficio), <i>gainful, useful</i>	ba-ril'-la (Sp.), <i>a plant cultivated for its ashes</i>

IN making common yellow soap, a quantity of palm oil is mixed with the tallow, and before the last boiling a portion of powdered resin is added. For white soap tallow alone is used, and for 'brown Windsor' and other better sorts, a certain quantity of olive oil is added. The mottled appearance some soaps have is given to them by mixing other ingredients before the making is quite complete. The pretty-coloured and sweet-scented soaps, intended for the toilet, are made from the purest oils and tallows, and their different hues and perfumes are given to them afterwards.

Soap is composed therefore of oil or fat, soda and water. The proportion of the latter varies in different soaps, and depends very much on the kind of oil which is used. Cocoa-nut oil absorbs a very large quantity of water, and some soaps made of it have been found to consist of nearly three parts of water to one part of soap. Such soap would not, of course, be profitable to the consumer. All washing soaps dissolve much more quickly in hot water than in cold; hence careful people use the latter in washing, and therefore require less soap. By exposing soap to the air it loses some of the water, and becomes

drier and lighter, but at the same time it gets harder, and therefore does not dissolve so easily. Hence it is well to keep soap for some time in a dry place before using it. The hardness of soap, however, depends chiefly upon the quantity of oil used in making it. Where tallow only is used, it is very hard, and it is soft according to the quantity and quality of the oil.

There is, however, a sort of soap made in large quantities for other purposes than washing, which is almost in a liquid state. This is called soft soap. In making it, potash is used instead of soda-ash, and also the cheapest kinds of oil, such as fish, whale, and seal oils, and also hempseed, linseed, and other vegetable oils. It can therefore be made much cheaper than hard soap. The process is much the same in both cases, except that in making soft soap none of the refuse lyes are drawn off—all the lyes and all the melted fat and oils being mixed together. The peculiar appearance of soft soap, which is something like the pulp of ripe figs, is given to it by adding a little tallow before the boiling is quite completed. The process is called *figging*.

The soda-ash which is so largely used in soap-making is obtained from common salt. When salt was very dear, owing to the heavy duty on it, kelp made in Scotland, barilla in Spain, and varea in France, all of which were obtained from the ashes of seaweeds, were used instead of soda; but since the salt tax has been removed, soda only is used.

The use of soap was not known to the Romans until after they had conquered Gaul and Germany. The rude tribes of those countries had long been acquainted with the art of making soap, and the proud Romans were glad to learn it from them. When the ruins of Pompeii, an old Roman town, were discovered some time ago, a large soap-manu-

factory was found, together with a quantity of soap. The latter, which must have been made seventeen hundred years before, was still in good condition. The art of making soap was, however, known to the world long before that time. We may remark here that there are certain kinds of earth which possess cleansing properties equal to soap, and which are employed by fullers and others in extracting grease. There are also parts of numerous trees and shrubs which are used instead of soap. The pulp of the berry of the soap-tree, which grows in the West Indies, is sixty times more powerful than soap, and is largely used. The bark of a particular kind of tree is used instead of soap by the natives of South America, and also by the Malays. And in our own country the roots and leaves of the soap-wort, a plant which is well known, are often used in the same manner.

In no other country is so much soap made and used as in England. The chief seats of the trade are London, Liverpool, and the adjoining districts; and at Bristol and Hull. In Scotland, too, great quantities are made. There are many trades which could not be carried on without soap, so that vast quantities are required for other purposes than washing. Upwards of two hundred million pounds' weight of soap are made annually in this country, some of it being for export. Formerly soap was subject to a heavy duty, which at one time was as high as 3*d.* per pound. In 1840 this duty yielded above one million pounds sterling to the Government, but in 1853 it was entirely removed.

What seems to English people a singular custom prevails in France and other countries on the Continent. In the hotels soap is not supplied to the bedrooms, and if it is asked for it is always charged at a high rate. Hence travellers usually carry soap

with them. The reason of this is that French people appear to think that it is not cleanly for one person to use soap which has been used by another, and hence each one has a piece to himself. In England this is not thought necessary, and yet English people yield to none in point of cleanliness, and let us hope they never will, for an old proverb says, 'Cleanliness is next to godliness.'

S. G.

CARPETS, AND HOW TO SWEEP THEM.

gen'-er-al-ly (L. <i>genus</i>), <i>commonly,</i> <i>in general</i>	sur'-face (L. <i>super, facies</i>), <i>the</i> <i>outside</i>
cap'-i-tal (L. <i>capitalis</i>), <i>the chief</i> <i>city, chief</i>	u'-su-al-ly (L. <i>usus</i>), <i>commonly,</i> <i>according to custom</i>
reg'-u-lar (L. <i>regula</i>), <i>according to</i> <i>rule</i>	thor'-ough-ly <i>fully, completely</i> so-lu'-tion (L. <i>solvo</i>), <i>any matter</i> <i>dissolved in a liquid</i>
en-tire'-ly (L. <i>integer</i>), <i>completely,</i> <i>fully</i>	

SOME rooms are entirely covered with carpets, while others are only partly covered. When the rooms are quite covered, the carpet is generally nailed down to the size and shape of the room. Carpets that do not fit the room are seldom nailed to the floor, so that they can be easily taken up and shaken.

Carpets are made in various parts of Great Britain, and are named from the places at which they are made; thus, Kidderminster carpet was first made at Kidderminster, in Worcestershire; Wilton carpet was first made in Wiltshire; Axminster carpet, in imitation of Turkey carpet, at Axminster, in Devonshire. Scotch carpet is made in Scotland; Brussels carpet was first made at Brussels, the capital of Belgium; now it is made in England. Very large quantities of carpet are made at Halifax in Yorkshire. Turkey carpets are brought from Turkey.

The art of making carpets is called carpet weaving.

ing. The wool of which they are made is first picked, then scoured, and afterwards combed. It is then laid straight and drawn into regular threads, which are twisted into yarn and dyed of various colours. They are then woven together, that is, made to cross each other by means of machines, just as we cross threads in darning. The long threads are called the warp, and the cross threads the woof.

Kidderminster carpet is made entirely of wool. The warp and woof cross each other so as to produce certain patterns; and both sides being very nearly alike, when one side has worn shabby, the carpet may be turned, and the other side used. Brussels carpet cannot be used in this way, because the woollen surface is worked upon a ground of strong hempen thread; the woollen threads are drawn up into little loops over wires, which are afterwards taken out, and the loops sometimes cut. Hearth-rugs are made in this manner. Wilton and Turkey carpets are made much in the same way as Brussels carpets, except that Turkey carpets are entirely woollen, the loops are very long and are always cut. For this reason Turkey carpets are warmer than others, and are softer to tread upon. Drugget and felt carpets are made in a different manner, and have their patterns printed on them after they are made.

Carpets are not all of the same width. Stair carpeting is made to suit the width of stairs. Kidderminster and Brussels carpets are made in long pieces of different widths, usually about three quarters of a yard, and in order to fit them to cover rooms, they are cut to the proper length and sewn together. Turkey carpets, on the contrary, are made all in one piece. Carpets are more used in England than in any other country. In places where they are little used, the floors are covered with matting made of dried rushes, or the fibres of plants and trees woven together.

To sweep a room covered all over with carpet, all the chairs and other pieces of furniture that can be easily moved should be placed in the middle of the room, the window curtains pinned up, and the sofas and articles of furniture that cannot be moved covered over. Tea-leaves that have been washed and squeezed rather dry should then be sprinkled round the sides of the room, and afterwards swept with a carpet-broom, and a light steady hand, towards one place, either the door or the hearth. A soft hand-brush must be used for sweeping under the sofas, as no part must be left unswept, or the room will not be thoroughly done. After the sides are finished, the furniture that was moved can be replaced in its former position, and the middle of the room swept in the same manner. When the carpet has been swept all over, the dirt and tea-leaves should be at once taken away, and emptied into the dust-bin.

Carpets that are not nailed down should be taken up at least once a week, and thoroughly shaken. Sometimes they may be thrown across a pole or strong line, and well beaten with a stick, first on one side, then on the other.

Once a year, at least, every carpet should in this way be beaten; the floor underneath should be well scrubbed and dried, and the carpet again nailed properly down. It is best that this yearly cleaning take place in April or May, when the winter fires are over.

When carpets are a little dirty, the colours may be brightened by being rubbed with a damp flannel. Grease spots in carpets may be removed by using a solution made of raw potatoes grated into a little water; this mixture should be sponged on the faded or greasy parts, and wiped up with a clean flannel. If carpets are very dirty, they should be taken up

and well beaten, then well swept on both sides with a hand-brush, afterwards placed right side upwards, and scoured with bullock's gall and soap and water. They should then be dried with linen cloths, and, if possible, spread upon grass for a short time.

W. H.

THE SEWING-MAID.

ex-claim' (L. exclamo), <i>to cry out</i>	op-por-tu'ni-ty (L. <i>opportunitas</i>), <i>fit time</i>
sens'i-bly (L. <i>sentio</i>), <i>in a sensible manner</i>	in-stal', <i>to invest, or place in any rank or office</i>
pro-cure' (L. <i>procuro</i>), <i>to obtain</i>	dis-cov'-er (Fr. <i>découvrir</i>), <i>to reveal, to show</i>
ex-am-i-na'-tion (L. <i>examen</i>), <i>the act of questioning or examining</i>	im-prove'-ment (L. <i>in, probo</i>), <i>progress from good to better</i>
de-cide' (L. <i>decido</i>), <i>to settle, to determine</i>	ex-pert' (L. <i>experior</i>), <i>skilful, ready</i>
per-se-vere' (L. <i>persevero</i>), <i>to pursue steadily</i>	

A LADY sat in her nursery, thinking. Before her was a basket filled with various garments. On the table lay a large paper parcel containing a roll of holland, another of brown calico, and a quantity of flannel. 'Yes,' said the lady, 'there is no help for it; nurse cannot possibly make and mend all these things, and I have so little time for needlework; I must get a sewing-maid; but where?' Again she sat in deep thought, but presently exclaimed, 'Emma George will be just the girl. I want some one who will work quickly and sensibly; one whom I can trust to cut out and place, one who can stitch and darn button-holes, and herring-bone, to say nothing of sewing and hemming, running and felling. Yes, Emma George is just the person I need.'

I am sure you are all very curious to know who Emma George was, and why Mrs. St. John thought her such a good needlewoman. Emma was the

only daughter of a poor widow who lived in a cottage belonging to Mr. St. John. The mother was often ill, and Emma did all in her power to earn a living for them both. But she was not very successful. She was small and delicate looking, and had found it difficult to procure employment. She had lately been working for a dressmaker, which had not at all improved her health. She stitched away early and late; but had it not been for the help of kind friends, she and her mother must often have wanted food.

When Emma was quite young, she had attended a school in which Mrs. St. John was much interested.

At this school needlework examinations were held at stated periods, and sometimes prizes were given to the best workers. Emma was one of the most regular scholars, and being careful and diligent, her work was generally well done, and she had on more than one occasion carried off the prize. So now you know why Mrs. St. John thought Emma George just the person she wanted. When the message reached her requesting her to call upon that lady, she wondered what it could be for, and decided to go round on her way home from work in the evening. At first she could hardly understand what Mrs. St. John meant; it seemed too good to be true. Leave the hot stifling room, with the noisy girls and distracting machines, and go to live in that beautiful home, to have plenty of food and fire, besides money of her own every quarter! How delightful it seemed. But then she thought of her mother; how could she leave her? Would it be right to do so? Mrs. St. John saw the change in her look, and guessing the reason, kindly told her to go and talk it over with her mother, and let her know in a few days. The mother was not long in coming to a decision. She

would miss her daughter very much, but she could not think of allowing her to lose so good an opportunity for her sake. Besides, she would be very near, and could sometimes come to see her. Emma felt that her mother was right, and, in spite of her pain at the thought of parting, her heart was glad to think that she would now be better able to help her mother than she had been before. So it was all settled. A week was sufficient for her preparations, and in another week Emma was installed in her new office at Mrs. St. John's. She soon found out what she was expected to do—to mend and make many of the children's garments, besides doing any sewing that was required for the older members of the family. Her spare time was to be occupied in making clothes for the poor.

A pleasant little room was set apart almost entirely for her use. Her work-basket was well stocked with all kinds of sewing materials, and with a very glad and thankful heart she set about her work.

She found no difficulty in the plain kinds of sewing, but she was ashamed and mortified to discover, when she attempted the finer kinds of needlework, that she could not do them nearly so well as she had expected. Some button-holes she had been making in a shirt looked very clumsy things; and she had hardly done grieving over them when Mrs. St. John made her appearance with some fine stockings in her hand. 'See here, Emma,' she exclaimed, this will never do;' and taking a pair of scissors from the table, she cut out the ugly darns. Emma could hardly refrain from bursting into tears. 'I understand how it is,' said the lady; 'you do not give yourself time enough to do your work properly. You ought to have spent three times as long over the stockings than you did. The thin parts must

be darned in regular lines, and there must be no open spaces left when the holes are finished.' She then sat down and mended one of the stockings herself, while Emma did the other. When both had finished, Mrs. St. John again examined the work, and pronounced it much better than the last. 'And now,' said she, 'I want you to leave your sewing, and walk as far as your mother's house. You will find a basket of eatables in the nursery, and I hope you will have a pleasant time.'

Emma had a quiet talk with her mother, which did her much good, and she went back determined to persevere in her work. After a few trials her old skill seemed to come back to her, and there was no longer occasion for grief over awkward looking work.

She found there was much thought and judgment needed, especially in the cutting-out. Her patterns were often arranged and rearranged, so that there might be no waste of material, and great care was needed, so that each piece might fit into its proper place. But practice soon made her expert in these particulars. As soon as the cutting-out was finished, the various pieces were pinned or tacked together. She then proceeded to make them up. The parts that were to be sewn together were done firmly and strongly. The stitching was kept at a regular distance from the edge; and in hemming she always fixed the whole length of the side before she commenced sewing, frequently comparing the width with the part first turned down, so that all might be regular. In wide hems she cut a paper or card the required width, and used it as a guide. She never, if she could help it, left a thing she had begun before it was finished. She could not always manage this, as articles sometimes unexpectedly required mending; but as soon as the latter were

set right, she again took up what she had been compelled to lay aside.

Emma is still living with Mrs. St. John. There is very little in needlework that she now fears to undertake. Her mistress places the greatest confidence in her, and has never regretted the day when she engaged Emma George to be her sewing-maid.

R. B.

THE NURSEMAID.

re-com-men-da'tion (L. re, com- mendo), <i>the act of commending</i>	fa'-mous-ly (L. fama), <i>with great success or renown</i>
char'-ac-ter (Gr.), <i>reputation</i>	un-for'-tu-nate-ly (S. un, L. for- tuna), <i>unhappily</i>
ca-pa'-ci-ty (L. capax), <i>ability</i>	sat'-is-fy (L. satisfacio), <i>to please</i>
a-dapt' (L. ad, apto), <i>to fit one thing to another, to suit</i>	ful y
suc-ceed' (L. succedo), <i>to pros- per, to follow</i>	re-quire' (L. requiro), <i>to claim, to need</i>

'If you please, Miss Wray,' said Mary Moore, one of my oldest and best scholars, 'mother has heard that Mrs. Palmer, of Grove House, is in want of a nurse-girl, and she is going this evening to ask if I shall be suitable for the place. And mother wished me to ask if you would be kind enough to give me a recommendation if Mrs. Palmer should want one. I have not been out to service before, but mother says, that as I have been such a long time at school, your report of me would be almost as good as a character from a mistress if I had had one.' 'Yes, Mary,' said I, 'your mother may refer Mrs. Palmer to me; but, that I may be able to speak the more confidently about you, let me have some talk with you this dinner-hour. Come into the class-room, where we shall not be disturbed.'

'So, Mary, you think you would like to go into Mrs. Palmer's nursery?'

'Yes, ma'am.'

'Well, my child, I think you are as well adapted for the place as any girl I know. You are the eldest of your family, I believe?'

'Yes, the others are all younger than I.'

'And you have often had charge of your younger brothers and sisters?'

'Yes, ma'am.'

'How old is baby?'

'Thirteen months, ma'am.'

'Does he ever cry?'

'Oh, yes! very often.'

'How is that?'

'Sometimes he is not well, and then he cries; and then, though I love him very dearly, and I am sure he loves me, yet he is fonder of his mother, and when she is wanting to do something for father, or in the house, and I have to take him from her, he is so sorry to leave her that he begins to cry.'

'That's very tiresome, and of course you get vexed with him.'

'Oh dear no, ma'am, I don't often feel vexed; indeed, sometimes I could cry with him.'

'Why, Mary?'

'You see, ma'am, his little face looks so full of grief, and the big tears roll down so thick and fast, and his trouble is so real to him, that I can't help being almost as full of sorrow as he is.'

'But your mother must be parted from him sometimes, and is it not trying to have him cry in that way?'

'Eddie does not understand, ma'am, that mother must be taken from him, and so I try not to be cross; indeed, there is no need, for I have only to speak gently to him, kiss him, and coax him to take notice of something else, and he soon forgets his grief, and I have him laughing and crowing in my arms, and looking the happiest baby in the world.'

‘How about washing Eddie; have you ever done that—and did you not have a terrible time with him?’

‘Yes, I have washed baby; for when mother was ill the other day, and not able to do it, I tried, and mother said, I succeeded very nicely. Mrs. Weeks offered to come in and see to him, but mother said, that though she was a good neighbour and a kind-hearted woman, she was so rough in her treatment of children, that she feared there would be quite a scene with Eddie. So I managed it. I first got him into a good humour by playing little tricks with him; then I put a nice large basin of lukewarm water ready, found the sponge mother always keeps for washing baby, placed the soap near, hung the softest towel I could find over the chair, and then, as I had a stuff frock on, I looked about for one of mother’s large smooth linen aprons, which I put round me, not only to protect my dress, but that it might be pleasanter for Eddie to sit on. I lifted him on my lap, and in taking off his night-dress we had a little game of bo-peep, and even with the sponge we played a few tricks; but I took care to wash him well for all that. I gently rubbed his curly head, and all behind his ears, and though when it came to his face, and the soap went into his eyes, he cried out, yet we soon made it all right, for I talked as coaxingly as I could to him, and he was so fond of putting his little feet and hands into the water, that I got famously over the rest of him. Then he had to be dressed, and I kept him well amused while I put on each garment. Unfortunately, when I came to his frock I found a button off, and I looked round for a pin; but all of a sudden the thought came into my head, oh dear! suppose when father has his little romp with Eddie the pin should get out of its place, and run into his flesh.

That would be sad; so I popped him down upon a rug on which mother is always careful not to let pins, needles, or broken bits fall, and ran for a button, sewed it on, and in five minutes more baby was as well dressed and happy-looking, mother said, as if she had attended to him herself. And I was so pleased to have satisfied mother, and to have had so little crying from Eddie.'

'Well, Mary, you *were* successful, and I am sure you may be trusted to *wash* a child, if such be required of you. It is now time to go home to dinner. After four o'clock you may come to me again, for I shall then be at liberty to have a little more talk with you.'

L.

THE NURSEMAID (*continued*).

dis-miss' (L. dimitto), <i>to send away</i>	man'-age-ment (Fr. menager), <i>conduct</i>
pro-ceed' (L. procedo), <i>to go forward, to advance</i>	com-mend' (L. commendo), <i>to praise</i>
in-cline' (L. inclino), <i>to be disposed</i>	fre'-quent-ly (L. frequens), <i>often</i>
as-sume' (L. assumo), <i>to take to</i>	re-pair' (L. reparo), <i>to restore, to mend</i>
con-tin'-u-al-ly (L. continuus), <i>unceasingly</i>	de-fi'-cient (L. deficio), <i>wanting, imperfect</i>

WHEN school was dismissed, I proceeded at once to the class-room, where I found my young friend Mary Moore already in waiting.

'So we are to have some further chat?' said I.

'Thank you, ma'am, if you are so kind as to wish it,' replied Mary.

'Well then, when you were taking such sole charge of your brothers and sisters, how did you get on with Nellie, the one next to baby? You have often told me she is inclined to be peevish, and that she is never ready to go to bed. I am afraid you had trouble with her.'

‘Well, ma’am, she is sometimes rather fretful, and, I am obliged to own, not often willing of her herself to go to bed. But at night I let her have a good game in the garden, and when I was ready to undress her I went quietly out to her, and, seeing that she had been gathering daises, I showed her how all her pretty flowers were shutting up their little red eyes and going to sleep, and told her, that if she did not make haste they would be asleep first. Then of course she was very pleased to come indoors, and in a little while I had her snugly tucked up in her little cot. But though she was very good, to be put to bed, when she *was* there she didn’t sleep, and soon she grew restless and peevish.’

‘Oh! that was vexing!’

‘Yes! and nothing I could say soothed or quieted her.’

‘Why did you not threaten her with Bogey?’

‘Oh, ma’am, I wouldn’t for the world.’

‘Why Mary?’ said I, assuming a little surprise.

‘You see, ma’am, there *is* no such thing, and for me to have said so would have been to tell a lie, which mother has always so warned me against. Besides, poor little Nellie, not knowing but it was true, might have been frightened out of her senses; for you remember, ma’am, there are several accounts of such a terrible thing in a book in the library; and mother, ever since I can remember, has continually showed me the wickedness and danger of quieting children in so dreadful a way.’

‘But what *did* you do?’

‘Why, ma’am, when I found her getting feverish and cross from her restlessness, I left what I was about, shook up her pillow, lifted her gently on to it, smoothed the coverlet, sat down by her side, took her little hot hand in one of mine, and began to sing very softly to her some of the pretty school

songs you have taught us. Oh it was wonderful, ma'am! In a few minutes she began to make that queer little noise babies call singing, and before I had expected it she was sleeping as soundly and sweetly as I could wish.'

Well, I must commend you, Mary, for your capital management! Have you ever taken the little ones out for a walk?'

'Oh yes! very often, but always by myself; for mother has constantly told me that when two or three girls get together they seem to have so much to say, and to be so interested in each other, that they frequently forget all about their charges, and the poor children, because nobody is looking after them, stray into all kinds of harm. So I used to like to take them into the pleasant fields, let them run about there and be amused; and when we returned, if mother could spare me, she would often give me a few minutes then to be with my friend, who only lived across the road.'

'Who did the sewing, Mary, for your little ones?'

'Mother and I between us, ma'am; that is, mother nearly always cut out and made their new clothes; but I was required to see that no strings were wanting, and that no buttons were off; and if I found that some of the clothing needed to be repaired, mother used to show me the neatest and best way of putting on a patch. I could always let out tucks and lengthen little skirts without troubling mother.'

'Well, Mary, I greatly admire the excellent way in which you discharged the various duties which fell to your lot at home, and from this pleasant little chat with you I shall feel more than ever delighted to give Mrs. Palmer the highest report of you as a scholar, and the most promising character as a nurse-girl. You have shown yourself so loving, truthful, patient, and gentle towards your little

brothers and sisters, that I think you will make a very good nursemaid. I am very thankful that so nice a situation as Mrs. Palmer's is vacant; and even though, when you get there, you may find yourself deficient in the knowledge of many duties that will be required of you, I can quite believe that a girl who has been so well trained at home, and who has benefited so much by the instruction she has received, will have the greatest desire for further improvement. With this assurance, Mary, I shall most certainly do all in my power to obtain for you the situation of nursemaid at Grove House.'

L.

THE LADY'S-MAID.

trav'-el (Fr. travailler), to <i>jour-ney</i>	val'-u-a-ble (L. valeo), <i>precious, worthy</i>
vis'-it (L. viso), to <i>go or come to see</i>	var'-i-e-ty (L. varius), <i>change, many and different kinds</i>
con-sid'-er (L. considero), to <i>think upon with care</i>	de-tect' (L. detego), to <i>find out</i>
ex-pe'-ri-ence (L. experior), <i>trial, practice of knowledge</i>	at-tain' (L. attineo), to <i>gain, to reach</i>
oc-cu-pa'-tion (L. occupo), <i>business, trade</i>	un-wear'-y-ing, <i>untiring</i>
com-port' (L. comporto), to <i>bear, to behave</i>	sub-mis'-sive (L. submitto), <i>yielding, obedient, humble</i>
	cul'-ti-vate (L. colo), to <i>improve</i>

'So you want to be a lady's-maid, Nellie?'

'Yes, aunt, I do very much indeed.'

'Why?'

'Oh, ever since I can remember I have wished to be what you are; you always seem so happy and well-off when you come to visit us, and your clothes are so good and pretty, that it must be the finest thing out to be a lady's-maid. My friend Louie Ball says the same, and all the girls tell me I am

cut out for one, because I am so fond of hair-dressing, and of trimming hats and bonnets. Besides, aunt, I am sure I never could content myself to live always in this dull little town; I long to go away and see fresh places, and you know ladies'-maids travel a great deal; they are obliged to go wherever their mistresses go. Why, aunt, you must have been nearly all over the world?'

'Well, Nellie, though I have travelled a great deal, I am afraid I can't say that I have been nearly all over the world; but I do not wonder if the number of places I have visited seem to you to comprise a large portion of it. But let us have a little talk upon this wish of yours with regard to your future calling. Of course I am very pleased you should consider me a fair sample of a lady's-maid, for truly I have nothing to complain of. My mistress is good and kind, my wages are very good, and of the United Kingdom I certainly have had a very excellent view. Still, Nellie, *all* ladies'-maids cannot say this; but I hope if it should fall to your lot to be one, that no worse experience of the occupation than I have had, will be your share. You know, Nellie, that before you can be a lady's-maid you must have some knowledge of dress-making, and an idea of millinery will be valuable to you. You must also be a neat plain sewer, and in fact able to you use your needle in a variety of ways. The hair-dressing business too is important to a lady's-maid, and you will have to keep your eyes open, even after you have finished taking your lessons in this art, that you may discover the way to manage the different styles of 'wearing the hair' which are constantly coming into fashion. So you see, Nellie, you cannot be a lady's-maid all at once; step by step only, the position is attained. Your mother tells me she is going to arrange with Miss Lane, the dressmaker and milliner in High

Street, for you to have two years' apprenticeship with her, by which time you will be turned eighteen. Then follow the lessons in hair-dressing, and if I hear a good report of you I will look out for a situation for you.'

'Oh aunt, I thank you very much indeed, and I promise to be most attentive and diligent to my work all through my apprenticeship.'

'But, Nellie, not only must you aim at making progress with your needle during the next two or three years; you must also be very careful with your temper, manners, mode of speaking and appearance. As to your temper, keep it well under control: remember a lady's maid must be submissive and obedient, and unwearied in her duties. Once or twice, during my stay here, I have noticed that you are a little inclined to be hasty, and disposed to be put out if things do not go just as you wish. This will never do in a situation like mine. You must, as I have said before, learn to be patient and submissive. Of course you will now and then be called upon to defend yourself from charges that may be mistakenly brought against you, but it must always be without a show of temper. Then as to your manners. Be very particular with them. No lady likes a coarse-mannered, abrupt, vulgar person about her. As a lady's-maid, you must endeavour to acquire a quiet, gentle way of moving about, in fact, a pleasing style of comporting yourself altogether, but without any affectation. And in speech too; cultivate the habit of speaking easily and correctly, and never intrude your conversation. Your mistress will give you the opportunity, when she wishes you to talk. As to your appearance; you must see that you are always neatly and becomingly dressed. A lady likes her maid to look well, but she will never approve finery, nor permit her to indulge in a tawdry

imitation of the style of her "betters." You will often be called upon to travel, Nellie, as you wish, and then you must take care to be neat and quick in packing, and watchful that nothing is ever lost or left behind. In a stranger's house, too, never be ready or willing to talk of your mistress's doings and affairs. From being constantly in attendance upon her, you will doubtless, now and then, become a little familiar with a few of her views and intentions. Let this knowledge be sacred with you; never discuss it till you have permission to do so. Be quick and willing also in your obedience to her commands. Remember you undertake to faithfully serve her when you accept the situation as maid; let this service then be well and honestly rendered.

'To-morrow, Nellie, I shall say good-bye to you, and I may not see you again for a long time; but I shall often think of you, and I shall trust the conversation we have just had will not soon be forgotten.'

'No indeed, aunt, it shall not be forgotten. I will remember every word, and try hard to become, by the time you obtain me a place, all that you say a lady's-maid ought to be.'

L.

THE HOUSEMAID.

en-u'-mer-ate (L. <i>enumero</i>), to <i>reckon up singly</i>	pro-cure' (L. <i>procuro</i>), to obtain, <i>to acquire</i>
va'-ri-ous (L. <i>varius</i>), <i>different,</i> <i>several</i>	pre-vent' (L. <i>prevenio</i>), to hinder
a-dorn' (L. <i>adorno</i>), to deck, to <i>embellish</i>	be-stow', to give, to confer
im-move'-a-ble (L. <i>in, moveo</i>), <i>that cannot be moved</i>	com-mence, to begin
	fin'-ish (L. <i>finis</i>), to bring to an <i>end, to complete</i>
	ar-range' (Fr. <i>ranger</i>), to set in <i>order</i>

'I WANT to be up very early to-morrow morning,' said Ann, the housemaid at Squire Horne's, as she

lighted her bed-room candle, and moved towards the kitchen door. 'I am to spend the afternoon with my cousin, who has come to our house for her health. But before I can get away, let me see what work I have to do. First, the house must be opened; then the drawing and dining-room grates have to be well polished, and the carpets swept; while the dust is settling there, I can be seeing to the stairs and the hall. The front steps must be whitened, and the brass knobs rubbed with the leather. Mistress had a fire in her room to-night, so the grate will have to be cleaned, but the other upstairs fireplaces will only want carefully dusting.' And so she went on enumerating, till she reached the door of her bed-room.

True to her resolve, Ann rose early next morning; quietly opened the shutters of the down-stairs rooms, drew up the blinds, raised the window-sashes, admitting as she did so the fresh pure air and bright sunshine of a May morning. Next, she fetched some nice large clean cloths, which she spread over the piano, couches, easy chairs, and indeed, on nearly all the various and handsome pieces of furniture which adorned the rooms. Then, going back to the kitchen, she returned with her arms full of brushes and dusters. There was a short-handled brush which she used for getting the dust from under the heavy or immovable articles of furniture, and there was a long-handled one, with which she gently and steadily swept all the shreds and dust towards the fireplace, from the front of which she had already removed the hearth-rug and screens. Next she lifted away the fender and fire-irons, and as she did so, bestowed on each a brisk rub with a soft dry duster. Another short-handled brush was now procured to gather all the dust and ashes from the grate into her dust-pan. This done, she

carried it away, and came back, with blacklead and brushes. Mixing the former to the thickness of paste, she applied it to all parts of the grate. Then, placing the blacklead carefully out of her way, she began at once to rub briskly with what she called her 'drying brush;' for she knew she would have a much better polish on her fireplace if she brushed it dry, than if she allowed it to dry slowly. Then came the strong quick rubs from the hard polishing brush, and presently her grate was 'a picture to be seen.' Replacing the fender, fire-irons, and hearth-rug, she proceeded to the dining-room, and very much the same sort of process was repeated there. Then, washing her hands from the blacklead, she gathered up all her brushes and dusters, closed the room doors, and made preparations for the hall and stairs. Beginning at the top, with a short-handled broom in one hand and a dust-pan in the other she swept the stairs carefully and noiselessly, one by one, from the top to the bottom. The hall had its share of cleaning too; the knobs were rubbed, the mats shaken, and the steps whitened. By this time she said the dust was settled in the rooms, so off she went with duster and dust-brush, to put them to rights. Every chair had its nice brisk rub with the duster, as also did book-stands, the piano, and the legs of the tables and couches. For the books and the highly-polished and finely-carved stands, she used her feather-brush, which removed the dust without scratching, and likewise prevented her having to take any of the handsomely bound volumes into her hands. Every article of furniture having been replaced, and the rooms finished, she closed the doors, and began operations with her duster upon the hall chairs, table, and umbrella-stand; nor were the banisters and stair-rail overlooked.

By this time her breakfast was ready ; and when she had finished that, she proceeded to the bed-rooms, for the family were all at breakfast, and there she commenced to strip the beds, taking the clothes off singly and carefully. Just a hearty shake, and an opening the windows wider, and there they were 'airing.' Into her pail she emptied all the slops, rinsing each article out with clean water and wiping it dry with a cloth. Carrying away her pail, she returned with two well-filled water-cans, from one of which she supplied the water-jugs, and from the other the water-bottles. The beds had been airing nearly half-an-hour ; they might now be turned over, well shaken, and covered up. To work she went, and how smooth and even they looked ! The curtains, too, she prettily arranged. Then the ashes in the fireplace were cleared away in the same cleanly way as from the drawing-room. The bed-rooms were not to be swept this morning, but down she went on her knees and picked up all the shreds and bits that were lying about. By the time these were carried away, and all her brushes put carefully up, the bed-rooms were ready to be dusted, and very pretty and neat they looked after she had finished them.

Work, you know, is not done by looking at it ; and so it won't surprise my young readers to hear that Ann's duties had taken up all her morning, and that after eating her dinner, she dressed, and set off to enjoy the pleasant half-holiday which, you will agree with me, she had thoroughly earned. M. R.

THE PARLOUR-MAID.

beau'-ti-ful (Fr. beau), <i>elegant, fair</i>	ob-ject'-tion (L. objicio), <i>opposition</i>
sym'-pa-thy (Gr. sun, pathos), <i>fellow feeling</i>	im-me'-di-ate-ly (L. in, medius), <i>at once, without delay</i>
ob-lige' (L. oblige), <i>to bind by any moral or legal force</i>	de-lect' (L. detego), <i>to discover, to find out</i>
sit-u-a'-tion (L. situs), <i>position, condition</i>	con-ver-sa'-tion (L. converso), <i>familiar talk</i>
op-por-tu'-ni-ty (L. opportunitas), <i>fit time</i>	ab-sorb'-ed (L. ab, sorbeo), <i>deeply interested</i>

SUSAN KING was very fond of getting her mother to talk about the time when she was in service. It was the greatest treat at Christmas and high days to drink tea out of the beautiful china tea service which had been given to Mrs. King by her mistress when she was married. There were half-a-dozen silver spoons too, the gift of the young ladies of the family. And even now the old servant was not forgotten. Every Christmas a parcel of clothes and groceries found its way to the cottage, with many messages of kindness; and in sickness they were sure of help and sympathy from The Grange.

'Mother,' said Susan, one afternoon, as she sat by her mother helping to make a shirt, 'I mean to be a parlour-maid, as you were.'

'Very well,' replied her mother, 'but you must not suppose that you can be that all at once. I began quite low down in the world. Your grandfather died when I was only thirteen, and I was obliged, at once, to begin to earn my own living. I was first a maid-of-all-work at Mrs. Hall the draper's. I was there four years. Then Miss Dundas, at The Grange, told me they were looking out for an under-housemaid, and she thought I should do for them. Miss Dundas knew I was looking out for another situation. Mrs. Hall wanted

only a young girl, and although I was sorry to leave her, I was anxious to be earning more money, for I knew that my mother sadly needed help. You remember, Susan, that kind old lady I went to see when we were doing some shopping the other day. That was my old mistress, Mrs. Hall.

‘I went as under housemaid to The Grange; but when I had been there a year the upper-housemaid left, and I took her place.

‘I had now many opportunities of learning the parlour-maid’s duties; and once, when she was ill for a fortnight, I begged Mrs. Dundas to allow me to take her place, while the other servants would help me in my own duties. We were all anxious to help our kind mistress. We knew that seeking a fresh servant for a short time would be a great trouble to her, besides which she had a great objection to having strange persons about her. So we all did our best, and managed quite well without extra help. In a few months the parlour-maid went away to be married, and you can easily guess what happened next. Mrs. Dundas offered me the situation, which I very thankfully accepted.

‘The part that I found most difficult was waiting at table. You think you would be so frightened. Well, I certainly did feel very nervous at first. My hand would shake, although I tried so hard to keep it steady, and sometimes I could hardly understand what was said to me. But the best plan is to forget all about yourself, and think only of your duties. You will need a quick, watchful eye to detect immediately anything that is wanted, and quickly and quietly supply it. I need not tell you always to go to the left side of a person when you hand anything; that I believe you learned long ago. You will have to watch against getting interested in the conversation at table. Funny and witty things may be

said, but it would be quite out of place for you to join in the laugh, and very improper for you to be absorbed in noticing dress, or in any way to fail in paying proper attention to your duties.

'Take my advice, and be very careful about your hands and nails. You cannot, of course, keep them as delicate and white as a lady's, but you can take care that they are quite clean and free from stains.

'In answering the door, let your manner be quiet and respectful; pay particular attention to messages, and deliver them as soon as possible. Let visiting-cards be carefully put in the proper place.

'Other duties will fall to your lot, but experience will be your best teacher, and in no two houses are they quite the same.

'Cheerfully undertake whatever is expected of you, and then I feel quite sure you will be both happy and useful.

'There is one other thing I wish you particularly to remember—not to talk about the family affairs to any of your friends; no, not even to me. There are some things it is quite proper to talk about, but there are others that should be kept quite secret. However loving and affectionate a family may be, there will be differences of opinion, and unpleasantness will sometimes arise; and troubles will also fall to their lot which they would greatly object to an outsider knowing anything about. You heard Aunt Ellen's remark the other evening when Lady Dee's maid went away, "If her mistress knew how much Jane talked about them, she would not be very well pleased." So make up your mind, Susan, that no one shall ever say this of you. I know you will find it very difficult to keep quiet sometimes, but it is very necessary that everyone should learn to bridle her tongue.'

R. B.

THE KITCHEN-MAID.

am-bi'tious (L. ambeo), <i>desirous of an office</i>	ex-ceed'-ing-ly (L. excedo), <i>greatly, very much</i>
found-a'-tion (L. fundo), <i>the basis of anything</i>	ap-pre'-ci-ate (L. ad, pretium), <i>to value, to estimate</i>
mul-ti-plic-a'-tion (L. multus, plico), <i>the act of increasing or multiplying</i>	prof-it-a-ble (L. proficio), <i>gainful, useful</i>
as-pire' (L. ad, spiro), <i>to desire eagerly, to aim at</i>	ul'-ti-mate-ly (L. ultimus), <i>at last, finally</i>

WELL, girls, to be a kitchen-maid is no disgrace; nay, rather it is one of the best situations a girl can take, if she is ambitious of getting on in service. Why, it's like the first rail in a ladder, or the foundation-stone of a house. It is the small beginning which leads to a large end. You have heard of housekeepers and professed cooks. Well, many of them have risen from kitchen-maids. 'But,' you say, 'a kitchen-maid has such disagreeable work to do, and is often little better than a drudge.' That she has some very disagreeable duties to perform, I am ready to admit; so have we all! Ask the boy or girl who has more taste for play than lessons, and see if they do not tell you that a long multiplication sum is very disagreeable to them. See that young apprentice who is required to be at the 'beck and call' of all the other members of the workshop; she will assure you *her* lot is disagreeable. This aspiring musician, who must sit all day long 'playing scales,' which *she* finds disagreeable. Yon dress-maker, who has taken uncommon pains to make a fashionable skirt, that her employer insists must be 'altered every way.' Is not her case disagreeable? That poor shop-girl, who has turned over her stock of ribbon from beginning to end to find a piece which her customer then declares 'will not suit.' Is she not to be pitied? And I might go on instancing 'disagreeables' till the subject tired you out.

Therefore, girls, be assured a kitchen-maid's work is not more disagreeable than other persons'. You say she is often little more than a drudge. Well, my belief is, that if she is a drudge, it's her own fault. Drudges, in my opinion, are those whose forethought, management, and thrift, are so entirely at fault, that they would be drudges still, even if they were not kitchen-maids. Girls, take my view of a kitchen-maid. Here she is, up to her elbows in a tub of nice hot water, washing dishes, and arranging them in the rack. Next hour, she is carefully sorting and cleansing vegetables for the dining-room. By-and-bye Cook says, 'Sarah, I am going to make a fancy pudding; bring those towels you are folding and stand here; you will be able to take a glance at me now and then. Again; she is busy with her coal-scuttle, for the fire is low, and Cook will be wanting the oven soon. 'Dear me!' she exclaims, 'what a colour these tables are! I must use plenty of soap, soda, and scrubbing on them to-day. And those dish-covers; did you ever see how dull they have become! That tiresome saucepan, too! I was stupid enough to leave a drop of water behind after wiping it yesterday, and now it's rusty. This kneading-pan must be put in soak, for here and there the dough sticks hard and fast to it.' Well done, Sarah! your quick eye and ready hand will prevent your being a drudge. This is early in the career of a kitchen-maid; a year or so hence, and she will be cooking the servants' dinner, and by-and-bye, when Cook has her holiday, she will be managing very nicely for the dining-room. Still later, both mistress and Cook will say: 'Well Sarah, we are very loath to part with you, and we shall miss you exceedingly when you are gone; but it really would not be kind or fair to you to keep you on here as kitchen-maid, when you are so well

fitted to take a cook's place.' There are many regrets, but Sarah passes on to mistress's friend, where she is so liked and appreciated, that she stays eight years there. At the end of this time she marries Robert the gardener, a steady, sober, honest man, whose home she hereafter keeps bright and clean, and whose food is always prepared and set out in the most enticing manner. As they have no family, Sarah undertakes to add to their income by going out occasionally as a 'professed cook.' She is so honest, careful, and well-managing, that where she goes once she is wanted a second time, and her employment becomes so regular and profitable that she is able to put a trifle by, with which they ultimately purchase the cottage they have lived in ever since they married, and to which is attached an acre of ground, now well stocked with vegetables and fruit-trees. When Robert's old master dies, and the place is sold, he retires from service, and for the rest of his days is able to make a very comfortable living out of his own garden. He and Sarah live to a good old age, and at their deaths, 'the will' says, everything is to be sold, and the proceeds equally divided among nephews and nieces, of whom there are four, and they expect to get 100% each.

M. R.

MAID-OF-ALL-WORK.

sit-u-a'-tion (L. situs), <i>position, state, condition</i>	pre-pare' (L. præparo), <i>to make ready</i>
gen'-er-al (L. genus), <i>common, relating to the whole</i>	ac-quaint-ance (L. ad. cognosco), <i>a person whom we know</i>
ex-pe'-ri-ence (L. experior), <i>knowledge obtained by practice</i>	ir-re-sist'-ible (L. in, resisto), <i>not to be resisted</i>
po-si'-tion (L. pono), <i>situation, attitude</i>	at-trac'-tion (L. ad, traho), <i>the act or power of drawing to</i>
dis-a-gree-a'-ble, <i>unsuitable, unpleasant</i>	pro-ceed' (L. procedo), <i>to go forward, to advance</i>
ap-por'-tion (L. ad, portio), <i>to divide and assign in just proportion</i>	per-mit' (L. permitto), <i>to allow, to grant leave</i>
sug-gest' (L. suggero), <i>to hint</i>	con-sci-en'-tious (L. con, scio), <i>regulated by conscience</i>

MANY girls, on first going out into the world, go into situations as general servants. Very few persons care to take a girl into their families as nursemaid or housemaid, unless she has had some experience as a servant; and although that experience may not have fitted her for any particular situation, it will have given her a knowledge of many things that will be of use to her in any position that she may be called upon to fill.

As a general servant her duties will be neither light nor easy; but it is the first step in almost everything that is the most difficult and the most disagreeable.

Harriet Holmes was the maid-of-all-work to Mrs. Stone, the grocer's wife. There were four children, from three to seven years of age. These, with the house duties, gave Harriet quite enough to do, especially as Mrs. Stone had not very good health.

Harriet was always up by six o'clock in the morning. She arranged the sitting-room, lighted the fire, and set the breakfast. By this time it was seven o'clock. She then washed and dressed the

children, and brought them down to their mother. After breakfast she prepared the three elder children and took them to school, doing any errands that were needed on her way back.

There was no need to fear that she would stand gossiping with any of her old acquaintances; she had a pleasant smile and 'Good morning' for any she might happen to meet, but that was generally all. Neither did she find the shop-windows an irresistible attraction. However beautiful the flowers or gay the prints, they seldom obtained from her more than a passing glance.

When she reached home, she found the breakfast things had been put away, and she proceeded with her mistress to the bed-rooms. When these were done she went to the particular business of the day, for in this house special duties were apportioned to special days. One day the sitting-room was thoroughly cleaned; another day the bed-rooms were swept and scoured. The washing took up the greater part of the third, and ironing and mending a fourth, and so each day had its allotted task, and Harriet always knew what was before her.

When she was not too busy she assisted her mistress in preparing the dinner. She certainly was not much of a cook, but she could boil potatoes, toast a chop, and make a plain pudding, better than many girls of her age; and she constantly found means of increasing her knowledge, and very proud was she when her mistress permitted her to try her hand at any new dish.

Dinner over, and every thing in its proper place, she took the youngest child out for an hour. This was always a very pleasant time, for though she sometimes felt tired and worried before, the walk quieted her, and did her good. When she returned home it was time to set the tea, and after tea she found

plenty to employ her till the children went to bed. Then she cleaned their boots that they might be ready for the morning, and after that, if she had any spare time, she sat down to needlework.

Harriet certainly went to bed very tired every night, but she was not unhappy, for she had the satisfaction of feeling that she had been trying to do her duty.

Others, too, noticed how conscientious and industrious she was. A brother of Mrs. Stone, with his wife, came on a visit, and they liked Harriet so much that they wished to take her away with them. It is hardly likely they would have suggested such a thing, but Mrs. Stone had said she thought Harriet was now old enough for a better situation, and asked them if they heard of anything likely to suit, to let her know. When they told her what they had been thinking she was very pleased, and thought their house would be just the place for her, for although they only kept one servant, they could afford to give good wages, and as they had no children the work would be much lighter.

Harriet was very willing to return with them. She found the house a much larger one than she had been accustomed to, but she had no difficulty in getting through her work quite comfortably. At first her mistress took charge of the best furniture, and generally attended to the cooking, but in time Harriet learned to manage so well that these things were entrusted to her care.

Here she learned many useful lessons, and became a most valuable servant.

R. B.

THE FARM-HOUSE SERVANT.

com-pare' (L. con, paro), <i>to liken</i>	an-noy' (L. ad, noceo), <i>to vex, to molest</i>
qual-i-fi-ca'-tion (L. qualis), <i>endowment</i>	sanc'-tion (L. sanctio), <i>authority</i>
at-tend' (L. attendo), <i>to fix the mind upon</i>	prob'-ab-ly (L. probo), <i>with the appearance of truth</i>
pre-pa-ra'-tion (L. præparo), <i>the act of making ready</i>	dis-po-si'-tion (L. dispono), <i>temper, inclination</i>

How different are her duties compared with those of a London servant! How much pleasanter in some things, but how much harder in others! What London servants know anything about skimming pans of milk, or of feeding downy chickens, or newly-fledged goslings?

One qualification among many others a farm-house servant certainly must have—she must be an early riser. At the very latest she should be up every morning by half-past five, in summer even at five. Her first duty, when she gets down, will be to sweep up the brewhouse, light the fire there, and put on the kettle. This brewhouse is something like a back kitchen; it generally contains a dresser and plate-rack, a sink, a large copper, and a strong table. In the brewhouse the washing is done, and one or twice a year the beer for the family and the farm servants is brewed. After having attended to the brewhouse, her next duty will be to visit the dairy. Some farmers' wives always prefer to attend to the dairy themselves; but if it be entrusted to the servant, she will have to skim the pans of milk and take out those which have been skimmed the right number of times; and then carefully wash the shelves and floor of the dairy. After the dairy-work is finished, she will have to attend to the sitting-room of the family, which will have to be swept, and, if not carpeted all over, washed round the sides. If the floor is

of brick, milk-and-water will be the best thing to wash it with. When this room is finished so far, she had better leave it and put the children's milk on the brewhouse fire, or, if there are no children, begin washing some of the milk-vessels up; then, when the dust has had plenty of time to get settled, come back and dust the sitting-room and set the breakfast things. While the family are taking their breakfast, it will be her duty to finish washing the milk utensils, and scour the milk-pails. As soon as the family have done with them, the breakfast things should be removed out into the brewhouse, and the maid will now have time for her own meal. Her own meal being over, and the breakfast things washed up and put away, her work down stairs is finished for the present, unless we take into account the making up of the fires, which of course will need attention the whole day, a low fire being constantly kept burning on the brewhouse hearth.

Her next work will be up stairs, in the bed-rooms; here, when she has removed all the dirty water in her slop-pail, and filled up the water-jugs and bottles, she then proceeds to make the beds. Very likely in this work her mistress will help her, because it is much easier work for two to make beds than for one. The bed-rooms should then be left, for her mistress by this time will need her help in cooking or preparing for the dinner. A good mistress will teach her maid to make the puddings, and to do many other little things connected with the cooking; so that if a girl will only pay attention, she may learn much by watching how things are done. After dinner is prepared, all the things used in the preparation of it should be washed up and put back in their places. This will occupy all the spare time until the dinner-hour, when laying the cloth will be the maid's next business. In doing this she should take care to

place on the table a sufficient number of knives, forks, spoons, salt-cellars, and other things that may be wanted; for having to fetch things after the dinner is served causes a great loss of time and sometimes much annoyance. After the family have had their dinner, the maid will be able to have hers; and when this is finished, she should begin at once and wash up the things used during the meal. Then the brewhouse will have to be swept up, and the sink washed down. Certainly now, if all this has been well done, she quite deserves the half-hour or hour given her to change her dress. Having done this, it will be time for her to prepare for tea. The kettle will have to be boiled, the tea-things set, and the bread-and-butter cut; then her own meal-time will come again, and then clearing away and washing up once more. After tea it may be the maid's duty to hunt for eggs, although this is oftener done by a boy. The milk will again require skimming, and some of it to be taken out. The tired children must next be put to bed, and their boots cleaned for the morning. Then the maid will have a little time to call her own. This, if she is wise, she will use in darning and patching her clothes or reading some useful book. Her last work for the day will be to set and clear the supper table. Some days her work will be heavier even than this; but then she will have good wholesome food and plenty of fresh pure air; and if she is of a good-natured, cheerful disposition, even all this work will not frighten her.

E. B.

THE LAUNDRESS.

dis-cuss' (L. <i>discutio</i>), <i>to debate, to question</i>	del-i-cate (L. <i>delicatus</i>), <i>fine, soft, dainty</i>
in-tend' (L. <i>intepdo</i>), <i>to mean, to purpose</i>	com-mence' (Fr. <i>commencer</i>), <i>to begin</i>
a-dopt' (L. <i>adopto</i>), <i>to take as one's own</i>	trans-fer' (L. <i>transfero</i>), <i>to convey from one place or person to another</i>
op-por-tu-ni-ty (L. <i>opportunitas</i>), <i>a fit time</i>	no-tice (L. <i>noto</i>), <i>to observe, to heed</i>
oc-cur' (L. <i>occurro</i>), <i>to come to pass, or to come into the mind</i>	u-ten-sil (L. <i>utor</i>), <i>a vessel, an instrument</i>
in-i-ti-ate (L. <i>initio</i>), <i>to instruct in the rudiments</i>	per-se-ver-ance (L. <i>persevero</i>), <i>steady or continued pursuit</i>
mys-ter-y (Gr. <i>mysterion</i>), <i>something secret</i>	in-cur' (L. <i>incurro</i>), <i>to bring on, to become liable</i>

A GROUP of girls stood talking together one afternoon in June. They had just left school, and were eagerly discussing what they intended to do when their school days were over. 'I mean to be a laundress,' said Jane Barnet. Some of the girls looked at her wonderingly. 'Yes,' she replied, in answer to their looks, 'I do indeed, because laundresses earn so much money. There's aunt Susan; she has eight women working for her nearly all the week, and I know she gets a lot of money, for she often buys things that mother says she herself cannot afford.'

That very evening Jane had a talk with her mother about learning to wash, and Mrs. Barnet soon found out what had made her daughter wish to adopt this calling. She spoke very wisely to Jane, and told her that money ought not to be thought of first of all. Associates and usefulness were of more importance than money; still it was right to wish to get on; it was very necessary that there should be laundresses in the world, and she promised to see what could be done.

A suitable opportunity soon occurred of speaking to aunt Susan about Jane's wish. Jane was a favourite

with her aunt, and she willingly undertook to initiate her in the mysteries of her craft. 'But you must not think,' she said, 'that you will find it very easy work. You will have to bear heat and cold, tired legs and tired arms; your hand needs to have almost a giant's strength, and yet a touch so delicate as not to damage the finest lace.'

Jane began to think washing a more serious matter than she had imagined, but she still wished to try; so it was settled that after the Midsummer holidays she should take her place in the laundry.

The Monday morning came in due time, and very soberly Jane stood by her aunt's side. She was to watch at first, and see what was done.

The clothes were brought to the laundry in large barrows or trucks, and each woman had certain families' linen under her care. Without loss of time they unpacked the bundles and compared the clothes with the entries in the book brought with them. If they did not tally, a note was made to that effect. When all had been looked over, the aunt went quickly round to see that there had been neither oversight nor carelessness. The books were then carried away to a little cupboard, and the linen sorted. Laces were put in one heap, fine linen in another, large articles in a third, coloured things in a fourth, and so on.

While this was going on, soft water was being heated in the coppers. This was now poured into tubs. If it was too hot for the hands, cold water was added. The coppers were again filled with water, and now the actual washing commenced. The laces and muslins were first well soaped and rubbed in the warm water, and then put into the copper to boil. The fine linen was next done, and last of all the coloured articles. From the copper the linen was transferred to tubs of nearly cold water, and

every part well rubbed. It was then wrung out and rinsed in water, in which indigo or blue had been steeped, the slight tinge of blue improving the colour of the linen. Most of the things were then hung upon lines to dry. A soil on one of the garments was pointed out to one of the young women by aunt Susan. She looked very much ashamed as she unpegged it from the line and washed it carefully over again.

Jane noticed that two or three baskets of linen were put aside without being dried. She enquired the reason, and was told to have patience, and she would soon see.

When the linen to be dried was all hung out, some of the women began to scour and dry the washing utensils; while others went to another part of the room, to prepare for starching.

No sooner was the starch made than the articles left in the basket were soaked in it, and then put out to dry. The muslins and laces, which were already dry, were also starched. Jane was quite at a loss to understand why some things were dried and others not. 'Because,' said her aunt, 'if garments made of linen or calico were dried before they were starched, they would be inconveniently stiff.'

When all the clothes were dry, they were put into heaps and sprinkled with cold water. The starched things were then tightly rolled together in a cloth, and the other things carefully folded, mangled and ironed. The fine laces and muslins were done last of all, and Jane saw what careful treatment such delicate things needed. She felt sure it would be some time before she would be able to goffer, crimp, and iron as the women there were doing; but she determined to try her very best, and as it is not cleverness, but steady perseverance that is needed

in learning any trade, we may hope that she will succeed.

When all the articles were finished the books were brought out, and the linen sorted. It was then very carefully packed up and sent home.

In many laundries you may see machines used for washing and wringing. To be profitable these require steam power, but Mrs. May had not a business large enough to enable her to incur the outlay for the purchase of the engine and machines. By means of them, however, much labour is saved, and the washing is better as well as more rapidly performed.

R. B.

DRESSMAKING.

po-si'-tion (L. pono), *situation*
ac-quire' (L. acquiro), *to gain,*
to obtain
im-pos'-si-ble (L. in, posse), *that*
cannot be
ex-act'-ly (L. exago), *accurate-*
ly
par-tic'-u-lar (L. particula), *spe-*
cial, single

sat'-is-fy (L. satisfacio), *to please*
fully, to content
fin'-ish (L. finis), *to complete, to*
bring to an end
pre-fer' (L. praefero), *to value*
more
in-con-ve'-ni-ence (L. in, con-
venio), *unfitness, disadvantage*
un-com'-fort-a-ble (S. un, L. con,
fortis), *wanting comfort*

THERE are a great many poor women in England who would be in a much better position if they only had more knowledge of needlework; but they did not acquire this knowledge while they were young, and it seems impossible for them to do so now that they are older. Every girl should try while she is young to become a good needlewoman, and then she will not only be able to help her mother in the general sewing for the family, but she will also be able to make and mend her own garments. It is a very useful thing for a girl to learn to make clothes for dolls, because if these clothes are made properly

they will give her a good idea of how to make her own. Now suppose I give you some print and lining, and tell you to make a dress for yourself, I wonder how you would set to work? Perhaps you think it is not possible to do it at all. Well, then, let us try and manage it together. First of all, of course, we need a pattern. This you may not have; but you most likely have an old dress which fits you nicely. Unpick the body of this old dress, damp it and iron it out, and cut a good paper pattern carefully from it. Take this paper pattern and pin it on to your lining, and, allowing for turnings in on all sides, cut out your lining. After the linings are ready, cut out the print exactly the same, taking care if there is a flower or any particular stripe that it goes the right way.

When you have both the print and lining cut out, tack them together with great care. A table will be the best place to do this upon. Then hem the front sides, work the button-holes, or put on hooks and eyes, and tack the seams up on the right sides ready for fitting on. Get your mother or somebody older than yourself to help you fit it. Then, when it satisfies you, cut off all pieces which are not needed, untack, and stitch the shoulder and side seams very strongly. The next thing will be to make the sleeves. Cut out the pattern lining and print in the same way as you did the body, tack them, and stitch them together; the work need not be quite so strongly done as that in the other part of the body. As soon as your sleeves are ready, make some piping with a piece of print cut upon the cross or slant, and cotton cord, and tack this round both arm-holes, after which sew your sleeves firmly in. Now you have only to finish the body by putting the narrow band round the neck, and the band or piping round the waist. After you

have finished the body, cut out the skirt. It will be better not to try to make a gored dress until you have had some practice. In cutting out your skirt, cut out the front and back breadths first, then the side ones, and run them all together, being careful to keep them straight at the bottom; then put in the lining and run on the braid. Lastly, gather your dress and sew it in the band or on to the bodice, whichever way you may prefer. A print dress is best made without any trimming; but if a little is used be sure that it will stand washing. Print dresses should be made a little too long and a little too large for the wearer, because it very often happens that the print skinks when it is washed. In making your dress, never be afraid of wasting time in tacking. It will be far better to have to undo tacking threads than to unpick sewing or stitching. Be sure, when cutting the dress out, to allow plenty of room in the arm-holes, for scarcely anything is more uncomfortable or inconvenient than to feel that the arms cannot move about freely.

E. B.

THE ERRAND-GIRL.

prin'-ci-pal (L. principalis), <i>chief</i>	dis-cour'-age (Fr. décourager), <i>to</i>
in-for-ma'-tion (L. informo), <i>intelligence</i>	<i>dishearten, to depress</i>
tol'-er-ab-ly (L. tollero), <i>moderately well, passably</i>	main'-te-nance (Fr. maintenir), <i>support, protection</i>
char'-ac-ter (Gr.), <i>a mark, reputation, personal quality</i>	dis-tinct'-ly (L. distinguo), <i>clearly</i>
de-clar-a'-tion (L. declaro), <i>an open expression</i>	le'-gi-ble (L. lego), <i>that may be read easily</i>
suf-fuse' (L. suffundo), <i>to over-spread</i>	in-trude' (L. intrudo), <i>to thrust in</i>
	en-u'-mer-ate (L. enumero), <i>to number, to reckon up singly</i>

In the shop window of the principal milliner in the pretty town of Berton, there was a notice to the

effect that an errand-girl was wanted. Now this shop stood directly in the way which led to the National School ; and as the information was printed in tolerably large characters, it was no wonder that the attention of many of the girls who passed was caught by the paper, and that they stopped to read it.

‘An errand-girl!’ said Rosa May, scornfully. ‘Well, though I am wanting to leave school and get a place, I would *never* stoop to *that*.’ ‘Nor I,’ said Nellie Dean. ‘And I am sure I wouldn’t,’ echoed Florry White. But Susie Brown, the fourth girl in the group, stood silent. ‘Would *you* like to be an errand-girl, Susie?’ enquired I; for, unperceived by them, I had heard their several declarations, and had watched the varying expressions of their countenances. Susie turned her large but honest brown eyes upon me, and, as a bright blush suffused her cheeks, faltered, ‘I hardly know, ma’am.’ I saw at once that fear of the ridicule of her companions prevented her from speaking out decidedly; but she was too truthful to entirely deny the wish that lay deep down in her heart, to find some employment. Susie was an orphan; but she had lived with an aunt and uncle ever since her parents died, and had not fared badly. These kind friends had a large family of their own; and as the uncle was only an under gardener, the aunt often found it difficult to make his weekly earnings cover the weekly expenses. Susie knew this, and though her aunt had never thought of her going to service till she was turned fourteen, the great wish had come to Susie to find employment at once. This notice of errand-girl offering so quickly after her resolve had been made filled her with hope, but the scornful utterances of her schoolfellows had most certainly discouraged her. I learned all this in a quiet talk

we had when the morning's duties were over, by which time I could see she had earnestly striven not to remember Rosa May's remarks, but only the great need there was that she should ease her aunt of the care and expense of her maintenance. Susie needed a friend; so playfully tapping her shoulder, I said, 'Put on your hat; I will go with you to Miss Wyatt's; no harm can be done by enquiring what she expects of an errand-girl.' In a few minutes we were there, and I saw Susie cast some admiring glances as the door opened upon a work-room full of rather stylishly-dressed, but exceedingly modest and respectable-looking young women. Miss Wyatt came forward to the shop, and after learning our business, spoke as follows: 'Yes, I am in need of an errand-girl, but as I am as particular in engaging *her* as I should be an assistant or apprentice, I had better tell you at once what I expect and wish this errand-girl to be.

'First. She must belong to a respectable family.

'Second. She must bear the character of being thoroughly truthful, honest, and industrious.

'Third. I require that she will be careful and quick in the delivery of all messages and parcels.

'Fourth. That she is not given to gossip and talking.

'Fifth. That she is modest in her manners, and simple, neat, and clean, in her appearance.

'Sixth. That she is able to read easily and distinctly, and to write a neat legible hand.

'Seventh. That she is respectful in speaking, and attentive when spoken to.

'Eighth. That she has some knowledge of the proper use of a needle and thread.

'Ninth. That in case of carelessness, accident, or mistake, she candidly and truthfully comes to me directly she discovers it, and tells me all about it.

'Tenth. That in going her errands, she avoids making friends with the idle and gossiping girls who are so often found in the streets.

'Eleventh. That she is never forward or intruding at a house where frequent visits make her rather familiar with the people who live in it.

'Twelfth. That she is all I have described, not only because I require it, but also because she knows that it is right to be so, and feels that, beyond my approval, there is also necessary for her happiness and success the approval of her own conscience.'

Here Miss Wyatt ceased, and I looked at Susie, who had been holding her breath with interest and anxiety while these qualifications were enumerated. There was still hope and desire in her face, as well as very fair promise that at least she would try to be all that was required; and so I am sure Miss Wyatt thought, for our visit ended in Susie being engaged as errand-girl. Very fair wages were given her; and, to make the story brief, I may tell you that Susie so conducted herself in this humble situation that by degrees she was raised to an apprentice, from apprentice to shop-woman, from shop-woman to manager; and when Miss Wyatt grew too old to take further interest in millinery, she very handsomely presented Susie with the entire business.

M. R.

THE MILLINER.

ap-ply' (L. applico), <i>to put to, to keep at work</i>	re-spect'-a-ble (L. respecto), <i>worthy of respect</i>
ap-pear'-rance (L. appareo), <i>the thing seen, show</i>	ed'-u-cate (L. educo), <i>to bring out, train the faculties</i>
char'-ac-ter (Gr.), <i>a mark, personal qualities</i>	de-scrip'-tion (L. describo), <i>representation, the act of describing</i>
ap-pren'-tice (L. apprehendo), <i>one bound to learn an art or trade</i>	ex-am'-ine (L. examen), <i>to search into, to question</i>
in-dus'-tri-ous (L. industria), <i>diligent, laborious</i>	suc-ceed' (L. succedo), <i>to prosper, to follow in order</i>
con-nect' (L. connecto), <i>to unite, to join</i>	con'-trast (L. contra, sto), <i>opposition</i>

EMMA HART had quite made up her mind to be a milliner. When she was quite a little girl, she was fond of making dolls' hats and bonnets, and now that she was a tall girl of fourteen she thought she was quite old enough to begin to learn the trade. The best milliner in the town was a Miss Blonde, and to her Emma's mother applied. Everything was soon arranged, and not many days after Emma made her first appearance in the workroom. She felt rather afraid of Miss Blonde; for she had very searching eyes, and Emma thought she would be very severe. But she was mistaken; for her mistress, though strict, was not severe, and she liked to understand the characters of the girls in her employ.

There were two other new apprentices; and in order to test what skill or taste they had, she put some common ribbon and bonnets before the three girls, and told them to let her see what they could do. While they were busy she took up another bonnet, and talked to them as they worked. Suppose we quietly enter the room, and listen to what she is saying. 'I wish you clearly to understand that I expect all who come to me to learn my business to be thoroughly industrious, respectable

girls. I don't want you to get grand notions, and fancy yourselves young ladies. My idea of a young lady is a well educated, refined, gentle girl—one who would scorn to do a mean or unkind action. You think all rich girls don't answer to my description. Quite right; but riches do not make ladies any more than fine clothes do. Aim, in character and conduct, at being all that a lady is, but don't pretend to be anything that you are not. Because you are milliners, and will have to make fashionable bonnets, affords no reason why you should carry extreme fashions on your heads. You remember the fable of the silly creature that ran about exclaiming, "I'm a goose, I'm a goose." Ah, I see you know what I mean, so I need say no more about it. Don't misunderstand me. I like to see girls prettily and becomingly dressed; it is the unbecoming, out-of-place style, that I am speaking of.'

Miss Blonde now went to examine their work; she pointed out that one had put in too many stitches, making her trimming look stiff and inelegant. Another had sewn the ribbon so tightly over the front, that the shape of the bonnet was quite altered. Emma had succeeded best; but she had been rather too lavish with her ribbon, giving her bonnet a heavy appearance.

But I do not intend taking you through every step of the process. I think it will be more interesting and more profitable to give you some extracts from Miss Blonde's lectures, as we will call them.

You must suppose some weeks to have passed, and the girls are now busy with tulle and shapes, making up bonnets. Listen. 'I see that some of you *handle* your work too much. Everything connected with millinery should be touched as lightly

as possible. These long needles are to prevent your fingers coming in contact with the materials. And pins are often used instead of putting in stitches, to give a lighter effect.

‘I want to say a little to you about colour and style. In choosing your flowers, ribbon, &c., you must be very careful that they match, or form good contrasts. Do not trim a bonnet with blue ribbon, and then put in flowers of a different shade. There would be no objection to a decided contrast, say white or yellow flowers with the blue ribbon. So brown and blue contrast well, mauve and green, amber and black, scarlet and grey. But do not have your contrasts too decided, or they will be staring, as green and red. The great thing is to make the colours blend well together.

‘Then, again, the style of the bonnet should be adapted to the wearer. That which is suitable for one person may be very unsuitable for another. If a person is very pale, blue (especially near the face), would be very unbecoming, as it would increase the paleness. On the contrary, for a fair person with more or less colour nothing is more becoming. For slight figures, as a rule, the quieter head-dress the better; the flowers should be small, and the whole colouring soft. Dark people can bear bright colours, and tall people often look extremely well with large flowers.

‘In deciding what is suitable or unsuitable, I know you will often have nothing to do; for people have ideas of their own, and very often will have them carried out. But you will frequently have to do with those who will leave everything to your judgment, taste, and skill.

‘Another thing you must remember is that you cannot rule the fashions, many of which are very

absurd and very ugly. But though you cannot rule them, you may often modify them.'

R. B.

THE SHOP-WOMAN.

re-ject' (L. <i>reicio</i>), <i>to refuse,</i> <i>to cast off</i>	fi'-nal-ly (L. <i>finis</i>), <i>lastly</i>
de-part'-ure (L. <i>de, pars</i>), <i>a going</i> <i>away</i>	cu-ri-os'-i-ty (L. <i>curiosus</i>), <i>inqui-</i> <i>sitiveness</i>
ex-hib'-it (L. <i>exhibeo</i>), <i>to show,</i> <i>to display</i>	pro-nounce' (L. <i>pronuntio</i>), <i>to</i> <i>speak, to utter solemnly or</i> <i>officially</i>
sus-pi'-cion (L. <i>suspicio</i>), <i>the act</i> <i>of mistrusting or doubting</i>	me-thod'-i-cal (Gr. <i>meta, hodos</i>), <i>regular, orderly</i>
in'-jure (L. <i>in, jus</i>), <i>to hurt, to</i> <i>wrong</i>	mor'-ti-fy (L. <i>moror, facio</i>), <i>to</i> <i>humble, to vex</i>

You would like to have a talk to-day about shop-keeping! You used to think, when you were little ones, that playing at shops was the most delightful thing in the world, especially when you had a piece of cake or an apple to sell, and could finish by eating it up. You don't care so much now about the eatables, but you still think it must be very nice to wait in some shops. Being in a draper's shop the other day I heard a lady say to the young woman who was attending on her, 'Yes, it is a very nice shawl, but it is not quite what I want.' Another was produced which was admired, but finally rejected because it was thought too small. Others were spread before the lady, but to each there was some objection; black ones so soon got rusty, and white ones so soon looked soiled; in this there was a stripe or pattern the customer did not like, in that the fringe was too deep; and after spending nearly an hour in examining them, she finally took her departure, promising to call another day. The poor young shop-woman breathed

a deep sigh when she was gone, and proceeded to fold up the piles of shawls she had been exhibiting. She had found it difficult to keep perfect command of her temper, and speak gently and politely; but she was glad she had not given way to impatience, although she could not help feeling that it was not quite right of the lady to give her so much trouble in vain. It was not the first time, either, that kind of thing had happened, and she had a suspicion there had been no intention of purchasing a shawl, only of looking over them.

She felt uncomfortable, too, because she knew her master would not be pleased when he learned that nothing had been sold. Not a very charming picture, is it? It will be well for you to bear in mind that girls in shops have great need of patience and good temper, for they have much to bear; and a sharp or rude remark, besides being wrong, would soon injure the business. A shop-woman's manner should always be modest and respectful, and she must be particularly honest. In a shop there are, perhaps, more opportunities for being dishonest than in any other situation.

I shall never forget the appearance of a young shop-woman as she stood in the dock to be tried for stealing pieces of lace and silk from her employer. I had gone into the court as a matter of curiosity, little thinking what I should see and hear. There stood the poor creature, clutching the rail for support, and looking dreadfully pale and ill. The gaoler's wife stood by her, as she was too weak to be left alone. There seemed to be no excuse for her crime. She had been receiving good wages, but she had not resisted the temptation to take things that were not her own. How dreadful it was to hear the judge's reproofing speech as he pronounced her sentence! And then the wretched woman was carried back to

the prison. You think you could never do such things? I trust not. But this girl belonged to a respectable family, and had borne an excellent character previously to this. Be careful with the little things. Various articles may lie about, and you may think that they are of no use. But don't touch them. It is with the little things that mischief begins.

I think I need not tell you that a shop-woman needs to be very tidy and methodical. Everything that has been taken out should be carefully folded up, and put back exactly in the same place, so that there may be no difficulty in finding it when wanted.

In exhibiting goods, especially calicos and prints, avoid throwing them down on the counter. The current of air caused by so doing is very disagreeable to persons standing by.

When making out bills give your whole attention to them. Go through each item carefully. Don't be so anxious about quickness as correctness. The quickness will come with practice. It will be very mortifying to have bills returned because they are incorrect.

In all weights and measures give exactly the quantity. If you give more, you wrong your employer; if less, you wrong the customer.

Try to avoid gossip; for though you will be obliged to hear many things about your neighbours, you need not repeat them. Be civil and obliging to all, but show by your manner that you are sorry to hear evil of any one.

R. B.

THE FACTORY GIRL.

fact'-or-y (L. facio), a place where anything is made	ed-u-ca'-tion (L. educo), a training of the faculties of body and mind
ma-chin'-er-y (Gr. mechanè), complicated-engine for performing work	ri-dic'-u-lous (L. ridiculus), deserving ridicule
ar-range' (Fr. ranger), to put in proper order	ac-quire' (L. acquiro), to gain, to obtain
ig'-nor-ant (L. ignoro), wanting knowledge	fab'-rie (L. faber), a manufacture
op-er-a'-tion (L. opus), influence, action	dil'-i-gent (L. diligo), constant in application
pre-fer' (L. præfero), to value or esteem more	res'-o-lute-ly (L. resolvo), firmly, steadily
man-u-fac'-tur-ing (L. manus, facio), making by art	con-vince' (L. convinco), to satisfy, to persuade

WHAT a noise! It sounds as if thousands of tops were spinning round. There is talking too, and laughing, and singing. What can it all mean? O, this is a factory. The spinning noise is caused by a great many wheels turning round. A great many girls are employed here, and they certainly do not appear to be moped to death. The windows are all open, and if you listen you will hear that those inside are constantly moving about. They have to stand at their work, and walk backwards and forwards, so that their employment is much more healthy than if they were obliged constantly to sit. We will walk about; it will soon be one o'clock, and then we shall see them come out. The machinery stops. All is quiet for a minute. Here they are! Some were in such a hurry to get away that they could not wait to put on their shawls properly before they got into the streets. Others are inclined to indulge in a little fun, and rush after each other, shouting and laughing. What, not all gone yet! No, here is a group which has a different appearance from the others. The dress of each girl is neat and tidily arranged, and they all walk along quietly to

their homes. I fancy these girls have been more carefully brought up than those who went out first.

How often do we hear factory girls called ignorant and vulgar! Some may be so, as in other callings of life, but many of them deserve pity rather than blame. Some of them attended a Sunday school, but many preferred spending the Sabbath less profitably. Factory girls are charged too with being extremely fond of fine clothes. There is a great deal of truth in this. I remember meeting a party of factory girls from a manufacturing town in one of the midland counties, some of whom were dressed very ridiculously. One of them wore a white muslin dress, with low body and short sleeves, which she was evidently very proud of. She appeared to wish to be thought a lady, but the commonest servant girl knew that no lady would walk out of doors in a dress of that description. She would have looked far more lady-like in a simple print gown. But I am glad to say that few factory girls are so foolish as this. I once knew three sisters who dressed in the neatest, most becoming manner, and always looked much nicer than those girls who decked themselves out in gay flowers and smart ribbons. These sisters lived in a cottage with their mother. They supported her, while she took care of the home, making everything very clean and comfortable.

It is very difficult for girls belonging to a factory to acquire much knowledge of domestic affairs, for they leave their homes early in the morning, and come home tired at night.

In some factories the fabric is of so delicate a nature that the hands must be kept soft and smooth. Not many weeks ago, the wife of a fancy ribbon manufacturer remarked to me, 'The girls in our factory are obliged to be very particular about their

hands, or they could not manage their work. Many of them are far whiter than mine.'

But now I will tell you a short story of a factory girl who lived in our town. Anna Ray lost both her parents when she was very young, and was taken to live with an aunt. As soon as she was old enough she was sent to work at a silk factory, and as she was diligent and careful, she soon learned to understand her work. But she did not think that her being a factory girl was any reason why she should be rough and rude. She was always gentle and obliging to her companions, and they knew she would never join in any of their boisterous games.

Anna used to walk home quietly and modestly, and was always treated with respect by those who knew her. She constantly attended Sunday school, and felt that amongst her dearest friends were those she met there.

When she was twenty, a young mechanic, who had long admired her gentleness and goodness, asked her to be his wife. Anna had known Henry Webb for many years, but she could hardly believe that he wished to marry her. He soon convinced her that he was perfectly sincere, and in another year she became his wife. Henry Webb had just before commenced business for himself, and Anna, by her prudence and industry, was a great help and comfort to him. During the year before her marriage she had learned all she could about housekeeping from her aunt, so that she was able to keep her house in order; and when difficulties arose, she resolutely set to work to conquer them.

Thirty years have passed away. That large house at the corner, with the well stocked warehouse, belongs to Mr. Henry Webb. Those two young ladies just entering the door are his daughters,

and his son is a very successful London merchant. Mrs. Webb is one of the most useful and respected women in the town. Her home is a happy one, everything is well managed, and God has indeed given her His blessing.

R. B.

THE MACHINIST.

in-con-ve'-ni-ence (L. in, con-venio), <i>unfitness, disadvantage</i>	spe'-ci-men (L.), <i>a sample, a part like the rest</i>
treas'-ure (Gr. thesauros), <i>to hoard, to lay up</i>	struct'-ure (L. struo), <i>form, make</i>
re-col-lect' (L. re, colligo), <i>to recall to memory</i>	fa-mil'-iar (L. familia), <i>well-accustomed, well-acquainted</i>
in-tel'-li-gent (L. intelligo), <i>intelligent, skilful</i>	reg'-u-lar-ly (L. reg-ula), <i>in a regular manner</i>
dex'-ter-ous (L. dexter), <i>expert, ready, active</i>	con-tri'-v-ance (L. con, Fr. trouver), <i>a plan, a scheme</i>
pre-dict' (L. prædico), <i>to fore-tell</i>	du-ra-bil'-i-ty (L. duro), <i>the power of lasting</i>

GIRLS! have you ever thought what a wonderful age you live in? I dare say not, except indeed some of you have listened to stories from your grandparents about the 'good old times.' I remember I used to love to hear my grandmother talk of the days when she 'was a girl.' It seemed so queer to be told that she didn't often receive letters, because though she was 'maid' to Lady Lee she could not afford the postage. Then her journeys! rarely did she visit her home in the distant village where her parents lived; for the expense and inconvenience of travelling by old stage-coaches were so heavy that few except the rich could undertake them. And the books and pictures! Oh, how I used to laugh when she showed me a scrap-book, in which she had treasured lots of old-fashioned prints and extracts. Why one page was covered with small dauby-looking pictures, which she assured me she paid sixpence

each for, and I can tell you that in *our* day the commonest huckster would hardly have used them on his wrapping-up paper. Then the schools! Well, all she recollected of them was an old dame in a mobbed cap who used to sit in a high-backed arm chair with a birch rod on her lap, while one by one the boys and girls went trembling up to her side, to say their A B C, out of a well-worn book, or to spell out or read off at sight some two or three verses from either a Psalter or New Testament. Fancy that, girls! you who for a penny can send a perfect budget of a letter to any part of the United Kingdom; you, who, if you wish, can travel 300 miles in 12 hours for the same number of pennies; you, who can buy for sixpence a picture handsome enough to be framed; you for whom so many large well-lighted and pretty-looking school-rooms have been built, and so great a number of kind, loving, and intelligent teachers have been trained. Indeed, you do live in a wonderful age, and I hope you are all as thankful as I am, that 'Our Father in Heaven' saw fit to place us in the nineteenth rather than the eighteenth century.

But what of the title of this lesson? Well, it means, as I have no doubt you know, a person who understands how to use or work one of those wonderful inventions of the present age. A 'machinist,' then, as we speak of the term among women and girls, is a person who is able to manage that beautiful piece of mechanism called a sewing machine, in so dexterous a way, that she can produce the most beautiful specimens of needlework in a surprisingly short space of time. It will not be necessary for me to enter into particulars of the structure of this wonderful 'Seamstress'; I wish only to offer a few hints for the guidance of those who have some idea of earning their living by the working of a

sewing machine. The oftener you use the article the more will you become familiar with its various parts. It is the aim of every manufacturer to make his machine as simple in construction and as understandable to the worker as he can; and it should be the aim of every machinist to be as good a *fitter*, and as neat a *finisher-off* of needlework as possible.

The work to be done by the machine, whether hemming, gathering, stitching, felling, or button-holing, must be most carefully prepared. Let the hems be evenly folded, the edges tacked close together, the holes regularly cut, the material carefully guided under the needle of the machine; and when the treadle, or the hand-wheel, is steadily moved, you will have little difficulty in producing most beautiful stitches. When it comes to the *last* stitch, draw the material away, and with it a good long end of thread, with which the sewing has been done; cut it from the machine needle, and with an ordinary one fasten the work, both securely and neatly. There are two kinds of sewing machines, the chain-stitch and the lock-stitch; with the former, unless the last stitch is securely fastened, if it gives way, all the rest will 'rove' out, like knitting when the pins are withdrawn. With the latter, by a wonderful contrivance in the machine, each stitch is firmly fixed, much in the same way as back-stitching. No threads are drawn, as was often necessary with hand-sewing, so a machinist needs to have a very straight eye and a very careful hand. It is as impossible in this trade as in every other to do 'two things at one time;' so my parting advice is, that she who intends to be a good machinist must determine to fit well, to finish-off neatly and securely, and to give her most careful and undivided attention to her work while she is at it. If she do this, I am sure I can predict for

her success and beauty in her stitch ; durability, and neatness in her finish ; fair wages for her purse, and a pleasing consciousness within of having done her best.

M. R.

THE UPHOLSTERER.

in-crease' (L. <i>incresco</i>), to grow, to advance	re-fer' (L. <i>refero</i>), to allude
de-cide' (L. <i>decido</i>), to deter- mine, to settle	con-sid'-er-a-ble (L. <i>considero</i>), important, more than little
de-vel'-op (Fr. <i>développer</i>), to un- fold	mus'-cle (L. <i>musculus</i>), a fleshy fibre
pre-side' (L. <i>præsideo</i>), to be set over, to direct	con-sti-tu'-tion (L. <i>constituo</i>), the frame of body
pro-mote' (L. <i>promoveo</i>), to forward, to advance	im-por'-tant (L. <i>in, porto</i>), weighty, momentous
dif-fi-cul-ty (L. <i>difficultas</i>), hard- ness to be done, distress	ap-pren'-tice-ship (L. <i>appre- hendo</i>), the state or term of being an apprentice

'WIFE,' said Thomas Kemp, as he pushed back his chair from the table, upon which stood the remains of the meal he had so heartily partaken of, 'master sent for me to-day into the office ; and what do you think it was for ?' 'I am sure I don't know,' replied the person thus addressed. 'Perhaps to increase your wages.' 'No not exactly, though I am in hopes that will come soon.' 'I can't guess, Thomas.' 'Why it was to ask what we were intending to do with our Jane, who he knows is getting big and old enough to be leaving school.' 'Indeed,' observed Mrs. Kemp, 'and what did you say ?' 'Well, of course I told him, that we *had* decided to withdraw Jane from school this midsummer, and that we were wishing to meet with an opening, in which the talent you and her governess tell me she has for using her needle might be further developed. "Just the very thing, Kemp," says he. "I have a vacancy in our women's work-

room, and I was looking about for a nice healthy respectable girl to fill it. Your daughter called here yesterday, and I liked her appearance so much that I thought I would speak to you at once."

Now this master to whom we have referred was a well-to-do cabinet-maker and furniture dealer, and Kemp was his foreman. Attached to his spacious and well-stocked shop were work-rooms, one for men, the other for women and girls. Kemp, in a great measure, presided over the first; for as he was a steady, sober, industrious man, as well as a skilful mechanic, his master had been pleased to promote him. Over the second, as director and manager, there was a respectable middle-aged widow, who, after her husband's death, had been glad to work again at the trade which she had learnt in her youth, and which had very decently supported her till the time of her marriage. You will not be surprised to hear that both Mrs. Kemp and Jane were delighted that the opening they were so wishing to meet with should have offered so pleasantly. Mother and daughter waited on Mr. Kemp's master next morning, and the result was, Jane was engaged to go into the upholsteresses' work-room for a month on trial. The first week she did little more than 'look on' or attend upon the others, but the second Monday found her supplied with a decidedly stout needle and very strong thread, and she was desired to try if she could help the girl who sat next her, to make the case or 'tick,' as it is commonly called, for a feather bed. Now Jane had never used such an enormous needle before, and she found it somewhat large and awkward. The material too, was stiff and hard, and rather hurt her fingers; but as she really had a love for sewing, she soon overcame these difficulties, and by dinner-time had done a very considerable portion of the long seam which had been intrusted to her.

In the afternoon she was set to run a pretty chintz cover for an arm-chair, and next day she helped to put a very bright blue binding on some drab damask bed-curtains. So it went on for a month, by which time Mrs. Tracey, the forewoman, knew it was time to hear Jane's opinion of the upholsteress trade. 'You look tired this evening, Jane.' 'I am a little, ma'am.' 'You will not be sorry that we close early.' 'No, ma'am.' 'I'm afraid you feel our kind of work heavy and hard.' 'I did at first, but now I do not mind it at all; my wrists and fingers ached terribly at the beginning, but they have not been so bad since.' 'I dare say they did, Jane,' replied Mrs. Tracey, 'but you will find that the more you do of this heavy kind of work, so that you are not *overworked*, the stronger the muscles of your wrists and fingers will become, and the less pain you of course will feel. Our work is certainly heavy and tiring, and only a person of strong, healthy constitution should take it up as a trade. Still there is good money to be earned at it, and the variety of work that falls to the task of an upholsteress prevents it from being altogether unpleasing. You see that a strong firm stitch is needed; that care must be taken to make all the curious parts of the covers that are required for the sometimes strangely-cut pieces of furniture, fit easily and well. I think though, that the making of carpets is as hard a job as any we have to do. First the patterns must be well-matched, and the lengths evenly cut off. Then comes the sewing, which is not 'over edge,' but backwards and forwards stitch by stitch *under* the selvages. The process is slow, and the work heavy and tiring, but it is wonderful how quickly an upholsteress gets over it. Practice certainly makes ready as well as perfect. The cutting and making of drapery too, either for windows or beds, is important. In sewing, a light stitch is required, and

the stuff must be held easily in the hand, else there will be fulness and puckers, where it should be perfectly smooth. *Padding* again must be carefully managed, whether with horse-hair or wadding. There should be no lumps and no depressions, but a smooth, regular, even surface, so that when the cover goes on there may be no wrinkles. You have seen those little button-looking pieces which are stabbed on mattresses, couches and other padded furniture. Well, they are used to keep the padding from slipping out of its place. A long needle passed through them and through the padding as well, secures them firmly with the thread to the back or wrong side of the article. And now, Jane, I have given you all the particulars of the trade that I can. What do you say to following it? Your "month on trial" expires to-night.' 'Oh, ma'am, if you think I am fitted for it, I should be so glad to continue with you. I like the work very much, and indeed I will try my best to get on.' 'Well, Jane, you have been so diligent and steady at your work since you came, and have really shown such skill in the use of your needle, that I hope if you do in the future as you have done in the past, to make you by the end of your apprenticeship a first-rate upholsteress.'

M. R.

THE TAILORESS AND BOOT-BINDER.

de-tach' (Fr. détacher), to separate

im-port'-ant (L. in, porto), weighty, momentous

man-u-fact'-ure (L. manus, facio), anything made by art

vis'-i-ble (L. video), that can be seen

re-pair (L. reparo), to amend, to restore after injury or decay

re-quire' (L. requiro), to need
su-per-sede' (L. supersedeo), to set above, to set aside

apt'-i-tude (L. aptus), fitness, disposition

e-nu'-me-rats (L. enumero), to number, to reckon up singly

pro-s-per' (L. prospicio), a view, a ground of expectation

THE TAILORESS.—In these days of sewing machines there is less to be said on this trade than there would

have been formerly. Much of the heavy work which used to be done by the hands of tailoresses is now performed by the machines. Still there is ample scope for the earning of really capital wages by those who take it up as a calling. The work of a tailoress now-a-day lies chiefly in the fitting for the machine and in the finishing off after the garment has been detached from it. And here the most careful management is required. The articles must be evenly cut; the material steadily guided under the machine needle; the corners neatly turned, and the ends strongly fastened off. Waistcoat making is an important part of the work of a tailoress, for waistcoats are still better manufactured by the hand than by the machine. The seams are short, and the facings and double underlinings are required to be put on, without any stitches being visible on the right side. Now as the machine needle would pierce through the whole thickness, the tailoress is employed to do this portion: she only attaches her inside facings to the lining, hence there are no traces of her stitches on the upper side of the waistcoat. She needs also to be a good button-hole maker, for, although machines have been invented to do even this kind of work, most of the button-holes are yet made by hand. A tailoress is invaluable among the poorer classes. There is very much that a wife can do in remaking her husband's old suits for the boys in the family; and the *repairing* of men's clothes falls chiefly to her task. In sea-port towns she may have constant employ and liberal wages for making serge frocks and canvas trousers for sailors.

The Boot-binder.—This trade, like that of the tailoress, has been much assisted by the invention of sewing machines; nevertheless, to a master shoemaker, a good boot-binder is worth a great deal.

Though the machine may *close* the boot, as it is called, and put in springs and stitch on toe-caps, there is yet needed the careful eye and ready hand of the binder to prepare and finish off. The *linings* of boots and shoes too require careful handling, and in the manufacture of slippers the fingers are not yet superseded. They neatly join the quarters to the fronts, close up the heel seam, arrange the lining, and carefully bind the shoe with narrow black ribbon, which gives so neat a finish to the whole. This ribbon is held lightly in the fingers, and with a short stout needle and some silk is stitched through the leather and lining, close to the edge right round the slipper. On the inside of the shoe the other edge of the ribbon is hemmed neatly down, and this is termed binding. To sew buttons on strongly, to stitch small patches of leather on the sides or backs of repaired boots and shoes, to rip out old elastics and put in new, to add bows and buckles, and to carefully prepare needlework slippers for the last, falls also to the share of the boot-binder. Her stitch must be strong and her finish neat. If, to an ability to use the boot-sewing machine well, she add a readiness to undertake, and an aptitude to perform, the other requirements here enumerated well, the boot-binder has as fair a prospect of constant employment and liberal wages as any other work-woman.

M. R.

THE WEAVER.

af-firm'-a-tive (L. affirmo), <i>that affirms</i>	em-ploy' (L. implico), <i>to keep at work, to use</i>
al-ter'nate-ly (L. alterno), <i>one after another</i>	in-sert' (L. inserto), <i>to thrust or place in</i>
en-quire' (L. inquiero), <i>to ask a question</i>	in'-stru-ment (L. instrumentum), <i>a tool, a machine</i>
man'-age (Fr. ménager), <i>to direct, to conduct</i>	fact'or-y (L. facio), <i>a place where anything is made</i>
de-cide' (L. decido), <i>to settle, to determine</i>	pre-fer' (L. prefero), <i>to value more</i>
oc-cur' (L. occurro), <i>to come into the mind</i>	lin'-ger (S. leng), <i>to remain long, to loiter</i>
ac-cept' (L. accipio), <i>to take, to receive</i>	in-duce' (L. induco), <i>to lead, to prevail upon</i>

'Do take me to see some weaving,' said a lady to her companion as they were walking through the quiet streets of a country town in Suffolk. 'With pleasure; but what sort of weaving would you like to see?' 'Oh! velvet, please; I have always wondered how that beautiful glossy surface was made on the velvet.' 'Well, we will call on Mary Bray; she will, I am sure, be glad to see us.' So the ladies went down the hill, glanced at the river, lying so bright and peaceful in the sunshine, and soon came to a row of quaint-looking houses. To some of these houses there appeared to be no door; but, passing through an entrance, they found the door was turned from the street, and opened upon a long pleasant garden. As they waited they heard above the noise of the loom a clear voice singing some sacred tunes. No one replying to the knock, the lady who knew Mary entered the cottage and rapped upon the stairs. There was silence for a moment, then Mary appeared, and to the question 'May we come up?' replied very heartily in the affirmative. She very willingly showed the ladies her loom, and, as far as she could, explained the use of the various parts. She pointed out the two large

wooden rolls upon which the long silk threads called the warp were twisted ; she then called their attention to the treadles, which, upon being pressed with the foot, moved these threads alternately above and below ; she then showed them the battens, the shuttle, the wires, the knife, and several other things. She then got into her loom, for there was a seat fixed in the front of it, and began very slowly to make a piece of the velvet. It was of a beautiful sky blue colour, and one of the ladies enquired how she managed to keep it from getting soiled. She said she had to be very careful—she never left it, even for half-an-hour, without covering it up, and she was obliged to keep her hands very clean and smooth, because if they were rough the fine silk threads stuck to them and very soon got broken. But suppose with all her care a stain got upon some part ? Then she had to pay a fine ; half-a-crown, a crown, or half-a-sovereign, as the case might be. The silkmaster who employed her would decide the amount of the damage. But now she would show them how that beautiful surface called the pile was made. Very quickly she inserted a long brass wire (having a groove in the upper part) between the two warps. She said at first she found it very difficult to put the wire in properly ; it was so thin it would bend about, and come out where it ought not, sometimes doing a great deal of harm. But now it had gone in quite right. Mary then pressed the treadles with her feet to move the warp, threw the shuttle backwards and forwards two or three times, and beat down the threads close to the wire by means of the battens. The wire was now firmly fixed in, and the next thing was to cut it out again. For that purpose she used a curious instrument, called a velvet knife. The knife was so fixed that only the edge could be

seen, and this edge was carefully put into the groove of the brass wire and quickly drawn across, cutting the threads of the warp, and leaving the wire at liberty. Two wires were used, and one was not cut out till the other was put in. Mary went on a little longer with her weaving, and then one of the ladies noticing a singing-book placed on the window-sill, asked if she was obliged to look constantly at her work. She replied that she was not, and now that she was used to it, she could learn hymns and verses and even tunes. She had joined a singing-class, and she generally learned the new tunes in her loom. She added that many girls worked upon a factory, but she preferred weaving quietly at home. She had gone to a factory to learn to weave when she was thirteen years old, and it had taken her several years to learn her trade perfectly. Now, she had bought her loom, and could, unless some great difficulty occurred, go on by herself. If she worked hard she could make a yard of velvet in a day, for which she was paid one shilling and sixpence.

The ladies thanked her very much for her kindness, and one of them lingered behind to put a florin in her hand, but Mary drew back and looked very much hurt. The lady told her that she had been losing a great deal of time, and time to her was money, and she would be so glad if she would accept what she offered. But nothing could induce her to take it. It had been a great pleasure, she said, to show the ladies her work, and she would not be paid for it. 'Well,' said the lady, as she rejoined her companion, 'I wish that American who said the English people never refused money could have been with us this morning, and then he would not be quite so sweeping when he next wrote of "Our Old Home."'

R. B.

THE VALENTINE MAKER.

ac-com'-pan-y (L. ad, con, panis),
to go with, to join with
 dif-fer-ent (L. differo), *dis-*
tinguish, unlike
 con-tain' (L. contineo), *to hold,*
to comprehend
 em-boss' (Fr. en, bosse), *to en-*
grave in relief
 ar-range' (Fr. ranger), *to put in*
proper order
 sep'-a-rate-ly (L. separo), *apart,*
singly

ca-ress' (L. carus), *to fondle, to*
embrace with affection
 dif-fi-cult (L. difficilis), *not easy*
 con-fu'-sion (L. confundo), *dis-*
order
 prof-it-a-ble (L. proficio), *gain-*
ful, useful
 as-so'-ci-ate (L. ad, socius), *to*
join in company
 sup-ply' (L. suppleo), *to fur-*
nish, to fill up

'ARE you going to send any valentines this year, Carrie?' 'Yes, three—one to my cousin Florence, who is away at school; one to our little Pattie; and one to the governess.' 'One to the governess! but won't she be displeased? I heard her say once that valentines were only for children.' 'No, I'm sure she won't. Don't you remember how glad she looked the other day when that tiny Mary Rae brought her some daisies from the meadow. I was standing close to her, and I said: "I did not think you would care for us to bring you daisies;" but she said: "Yes, I care for all flowers, but even if I did not, I should value them because that little thing liked to bring them to me;" and I should like her to think that I cared for her, too.' 'Well, where will you get your valentines?' 'Oh, my sister Sophie will make them: that is her trade; and she used to come to our school before she went to work, so she will like to do it, I know.'

The next day, accompanying Sophie Hall to her work, we entered a long room with a table down the middle, and a number of shelves with different kinds of boxes round the sides. These boxes had been sent over from France or Germany, and contained neat bundles of flowers, mottoes, and

pictures. There were six girls employed in making the valentines, and they generally did their work according to a pattern given them. They were supplied with paper—plain, embossed, or satin, according to the quality of the valentine; and they arranged the figures, flowers, &c., so as to form a pretty picture, fastening all to the paper with paste or gum. When necessary, they would use a little paint, to give a good effect, but that was generally with the cheaper kinds. When they were quite dry they were packed in boxes, either separately, or in bundles, and sent to the shops to be sold.

Eight o'clock was the time for leaving work, and then Sophie remembered her sister's request. The master was very kind and indulgent, and Sophie knew he would not object to what she wished to do; still she felt it was only right to speak to him about it. He readily granted permission: indeed, told all the young people that they were at liberty to make half-a-dozen each if they liked. They were all extremely obliged to him, and Sophie set to work at once to prepare hers. The two for the children she soon decided upon—a pretty cottage and a little boy playing with rabbits, for one, and a little girl caressing a lamb, with a garland of flowers round its neck, for the other. But now, she felt she had a more difficult task before her. She wished the one for her old teacher to be good, pretty, and true. She looked over several verses, but none of them quite pleased her, and at length she decided to manage without them. Flowers there must be. A wreath of roses and forget-me-nots, and festoons of heartsease and lilies, were fixed upon; and as a centre figure, she chose a Cupid holding a scroll, with the word 'Constancy' in pretty letters upon it. These were all neatly arranged on very handsome lace-paper; and Sophie went home quite

satisfied, to show her sister what she had done. Carrie was delighted; she could hardly admire them sufficiently, and thanked her sister many times for her kindness. The valentines were not put aside and forgotten. On the evening of February 13, Carrie put them safely into the post, hoping very much that they would not get crushed.

Next morning, when she entered school her cheeks grew very red, for there on the desk lay the very parcel she had been so anxious about the night before. After prayers the governess said: 'May I ask who has been so kind as to send me this?' Sophie stood up, but felt too ashamed to speak. Her teacher saw her confusion, and coming to her, told her how beautiful she thought the valentine, and how much pleasure it had given her. Carrie soon found courage to tell her all about it, and that it was all Sophie's work. A message of thanks was sent to Sophie, and then the teacher said: 'Suppose we talk a little about valentines and St. Valentine's day.' It would take too long to tell you all that was said; but among other things, the teacher told them that many, many years ago, the ancient Romans held a festival in the middle of February. This continued to be observed after the introduction of Christianity, and as the rulers of the Church at that time found it very difficult to induce the heathens who embraced Christianity to give up their old festivals entirely, without allowing some others in their stead, they established new festivals, or holidays, more in accordance with the Christian religion. Now St. Valentine was a Christian who had suffered martyrdom in the reign of the emperor Claudius, at about this time of the year, and therefore a festival was instituted in his honour, instead of the heathen festival mentioned above.

It is rather odd to notice how we have mixed the two things. We call the day by the name of the saint, but, instead of thinking of prayers and church, we only associate the day with pleasant fun. It is now the custom to treat it almost entirely as a children's day.

Very handsome presents used to be sent to grown-up people for valentines. At the present time the people of Yarmouth and some other parts of Norfolk still send each other substantial gifts on this day.

R. B.

STRAW-PLAITING.

pro-vide' (L. provideo), <i>to procure beforehand, to prepare</i>	con'-tra-ry (L. contrarius), <i>opposite, adverse</i>
pur'-chase (Fr. pour, chasser), <i>to buy</i>	re-quire' (L. requiro), <i>to claim, to need</i>
in'-stru-ment (L. instruo), <i>a tool, a machine</i>	quan'-ti-ty (L. quantus), <i>a portion, a part</i>
en'-gine (L. ingenium), <i>a machine</i>	in-vite' (L. invito), <i>to bid, to request</i>
loi'-ter, <i>to linger, to delay</i>	re-mark', <i>to observe</i>

NANCY BAREHAM lived in a village in Essex. Her father was a farm labourer, and as his wages were small her mother often found it difficult to provide properly for her family. There were five children, two younger than Nancy, and she was six years old on her last birthday. She remembered it exceedingly well, for her mother had made her a harvest-cake of some of the corn she had helped to glean.

The little maid had learned to do other things besides gleaning, for she could nurse the baby and sweep the room, and she used to earn some money by helping her mother plait straw for bonnets. You

might see her sometimes wandering about the lanes, her little fingers busy twisting the straws in and out as she worked away at her plaiting. She would wind the plait she had made round her arm to keep it from the dust, and so she strolled about humming tunes to herself. She was never too busy to drop a curtesy, and give a sweet smile to any lady who might be passing.

We met her one day and stopped to watch her at her work, and to ask her questions about it. She could not tell us all we wanted to know, but said her mother knew; and as we wished to purchase some of the different kinds of straws, we walked on with her to the cottage. Her mother sat rocking a cradle and working at a much finer kind of plaiting than Nancy. She told us they used the fine white wheat straws for their work, that they were cut into equal lengths of about a quarter of a yard, and then each length was split into several pieces by means of a little instrument called an engine. If they wished to make a coarse plait, they split the straw with an engine having but few teeth, and, on the contrary, when a fine one was required they used an engine with a great many.

She had a basin of water standing by her, in which some straws were lying; and she frequently wetted her fingers and drew them across the straws she was using. This prevented their breaking, for the dry straws are very brittle.

Mrs. Bareham said when they had done a certain quantity of plaiting, it was taken to a warehouse in the nearest town. It was always sold by the score. Sometimes when trade was very dull, they were not able to sell it at all; at other times they were paid so little for it that it hardly seemed worth all the trouble it cost; but every little helped, and they were glad to earn even a little. Just then they had a

very good time, for a great many straw hats and bonnets were being worn. For ordinary plait she was paid tenpence a score, and was able to make a score a day if she worked well at it.

We told her we had heard Nancy humming what sounded like a Sunday-school hymn. She said, yes, a kind gentleman had lately come over every Sunday afternoon to teach the children, and they had learned several hymns. He had also gone over one evening in the week to speak to the older people about good things. He was disappointed at first at having only men and boys at his evening gatherings, but when he enquired about it, he found the women and girls had loitered outside the school-room, listening to the service, but were too busy to leave their work and go in. He invited them to bring their work with them, and soon found out that they could plait and yet attend to other things, while the husbands and brothers were so used to it that it did not attract their attention.

Nancy's mother was one who, with her work in her hand, used to attend these meetings; and when we saw how she talked to us, looked after her baby, and yet plaited away all the while, we quite thought she would be able to give a good deal of her attention to what was said.

Mrs. Bareham told us that very few people in the village earned their living by plaiting; they were so poorly paid that the girls preferred going to service as soon as they were old enough. Even if they could have earned more money by it, she said they would rather do something else, for they got very tired of twisting the straws about, because it gave them nothing to think of. It was a very suitable employment for sickly persons, or for others to take up in spare hours, but very dull when worked at all day.

After that chat I understand all the better a remark my mother made many years before, when she had been buying me a new hat. The shopwoman had said hats were very cheap, and as we walked home, I asked her if she was not glad. 'No,' was the reply; 'I am so sorry for the poor plaiters.'

R. B.

LACE-MAKING.

Med-i-ter-ra'-ne-an (L. medius, terra), <i>encircled with land</i>	re-quire' (L. requiro), <i>to demand, to ask as a right</i>
prin'-ci-pally (L. principalis), <i>chiefly</i>	em-ploy'-ment (L. implico), <i>business, occupation</i>
ex-pose' (L. expono), <i>to lay open, to disclose</i>	at-tach' (Fr. attacher), <i>to fix, to join to</i>
ap-pear'-ance (L. appareo), <i>look, show, the thing seen</i>	per-form' (L. per, forma), <i>to do, to execute</i>

I WANT you all to come with me this morning to a lace-shop. We will ask the shopman to let us look at some different kinds of lace. He shows us several sorts. Maltese, made at a little island in the Mediterranean Sea; Cluny, made principally in France; and several others; but here is some which looks unlike the rest; let us ask the man what kind it is? He tells us that it is pillow-lace. I wonder how many of you have seen pillow-lace made. Possibly very few. Well, then, try to follow me while I explain the process. There are five things necessary before the lace can be made—first, a pillow; second, bobbins; third, parchment; fourth, cotton; and fifth, pins. Having procured all these, the next thing to be done is to fasten the parchment upon the pillow; then wind the cotton upon the bobbins, and begin the lace. The lace is made by sticking the pins in the parch-

ment according to the pattern stamped upon it, and twisting the cotton which is wound upon the bobbins round the pins. The pillow should be round and hard, but not too hard, or the pins will not stick into it. As soon as the lace is made, it should be covered up, because, if left exposed to the dust and smoke, it will have a dingy appearance. Lace-making is nice clean work for women and children, but it is likely to deform them if they sit at it too long, because the work requires so much stooping. For weak, delicate people, it is certainly a very unhealthy employment. The hands, while this work is being done, should be kept beautifully clean, or the cotton will become soiled, and the lace, when finished, will be of a bad colour. Women and children should only make lace when they have finished any house-work they may have to perform. The little bobbins used for this work are usually made of wood; they are very thin, and at the end of each bobbin a number of beads are attached. These beads help to keep the bobbins in their proper places. The pins are much finer and have sharper points than the common pins. The cotton for the most part is fine and soft; a coarser kind is, however, used for the raised parts of the lace. Some people use a sort of stool to rest the pillow against. This stool is called a pillow-horse. Lace-making employs many of the women and children in the counties of Bedfordshire, Huntingdonshire, Northamptonshire, and other parts of England. Even very young children of seven and eight years of age learn to make it.

I hope when you have read this lesson you will be able to understand those lines of Cowper's in which he praises a poor lace-maker:—

Yon cottager, who weaves at her own door,
Pillow, and bobbins, all her little store;

Content, though mean, and cheerful, if not gay ;
 Shuffling her threads about the live-long day,
 Just earns a scanty pittance, and at night
 Lies down secure, her heart and pocket light.
 She, for her humble sphere by Nature fit,
 Has little understanding, and no wit,
 Receives no praise; yet, though her lot be such,
 Toilsome and indigent, she renders much.
 Just knows, and knows no more, her Bible true—
 A truth the brilliant Frenchman never knew—
 And in that charter reads, with sparkling eyes,
 Her title to a treasure in the skies.

FRESH-WATER FISH.

dis-tin'-guish-ed (L. <i>distinguo</i>), <i>discerned, having marks of difference</i>	in-hab'-it (L. <i>in, habeo</i>), <i>to dwell in</i> us'-u-al-ly (L. <i>usum</i>), <i>commonly, according to custom</i>
fe-ro'-ci-ty (L. <i>ferox</i>), <i>fierceness</i>	as-so'-ci-ate (L. <i>ad, socius</i>), <i>to join company with</i>
vo-ra'-ci-ty (L. <i>voro</i>), <i>greediness</i>	pro-lif'-ic (L. <i>proles, facio</i>), <i>pro- ducing young, productive</i>
dim-in'-ish (L. <i>diminuo</i>), <i>to les- sen</i>	pro-ject'-ing (L. <i>projicio</i>), <i>jut- ting out</i>
ve-lo'-ci-ty (L. <i>velox</i>), <i>swiftness</i>	nu-tri'-tious (L. <i>nutrio</i>), <i>having the quality of nourishing</i>
a-quat'-ic (L. <i>aqua</i>), <i>living or growing in water, belonging to water</i>	

AMONGST our British fresh-water fish, the first that claims our attention is the Pike. It not only attains the greatest size, but is distinguished by boldness, strength, and ferocity, and has been termed, in consequence, the shark of the fresh water. Its voracity is so great that it rapidly diminishes the inhabitants of any piece of water in which it may take up its abode, and eight, of about five pounds each, have been known to devour eight hundred gudgeons in three weeks.

In form its body is long, and less tapering than most other fish. The lower jaw projects beyond the upper, and both are armed with sharp, curved teeth.

The body is covered with small scales, which, when the fish is in season, are beautifully mottled with green and yellow. It is very active, and swims with velocity. The flesh is firm and white, and much esteemed. The pike will sometimes weigh thirty or forty pounds, and has been known to attain a great age, Pennant mentioning one that had reached ninety years.

The Carp is found in some of our large rivers, and most of our fish-ponds. It prefers deep, still waters, and especially where the banks are clayey. The usual food of the carp is worms and aquatic insects, and it will sometimes grow to as much as twenty pounds in weight. The body is deep in the middle, and is covered with very large and distinct scales, of a brown colour, dark on the back, golden on the sides, and becoming paler towards the belly.

Like the pike, the carp attains a great age, some having been certainly known to have exceeded a century.

The common River Trout is found in most of our lakes and rivers, varying much according to the character of the waters in which it lives, and the nature of its food. All are greatly prized for the fine flavour of their flesh, but those which inhabit rapid streams are more esteemed than those which are found in deep, still waters, the flesh of the larger ones being of a delicate pink colour. This fish feeds largely upon insects, particularly on the may-fly, and the small water-snail. The younger fish may be seen sporting all the day, but the older lie concealed in deep holes and under banks during the day, and come out only at night to feed. The common trout is one of our most beautiful river fish. Its length is generally from ten to fifteen inches, and its weight from half-a-pound to a pound

and a half, though some will reach two or three pounds. The common trout has a short head, and large eyes, and the body is thick and plump, and covered with small scales. The colour of the back is light brown, marked all over with spots of reddish-brown. Along a line on the centre of each side are numerous bright red spots, with a few above and below them; the lower parts of the sides are a beautiful golden yellow, and the belly silvery white. Some of the fins are tinged with reddish-brown, and others are orange brown.

The Salmon Trout inhabits rivers in which it can have access to the sea, but some are found in lakes far removed from the ocean. It is larger than the common trout, being from two to five pounds in weight, and it is not spotted like the latter.

The Perch is common in our lakes and rivers where the water is clear. It is from ten to eighteen inches in length, and will weigh from half-a-pound to two or three pounds. It is not so thick as the trout, and very much deeper, the back being greatly rounded. The fins are very spiny, and the scales distinct. The back is olive brown, gradually becoming lighter towards the lower parts, and there are five or six distinct bands of dark brown passing from the back across the sides. It usually associates in shoals, and the flesh is firm and white.

The Bream is found in lakes and deep, quiet rivers. It is from one to two feet in length, and its body is very deep and thin, the back being much rounded. Its flesh is coarse, and without much flavour.

The Tench is fond of still, muddy waters, and is chiefly an inhabitant of ornamental ponds. It is a very prolific fish, and the flesh is very good. The colour is olive brown, tinged with gold, and the scales are large and distinct.

The Dace and Roach are both common fish in our clear, quiet streams. They go in shoals, and are not considered equal in flavour to those previously mentioned.

The Grayling delights in clear, rapid streams like the trout, but it is of a more elegant and slender form than the latter. In colour it is silvery gray, the back being slightly marked with bluish-green. It is from twelve to eighteen inches in length.

The Eel differs greatly from all the fish mentioned from its long, serpent-like form, which is from two to three feet in length. The head is pointed, the lower jaw projecting beyond the upper, and the body is rounded for the greater part of its length, becoming thin and flat towards the tail. It is found in all our waters, and is greatly esteemed as a rich and nutritious fish, though too oily for some stomachs. It does not lay eggs like our other fresh-water fish, but brings forth its young alive. In the winter it buries itself in the mud. It feeds upon animal substances, whether fresh or decaying. It will live long out of the water, and has been known to travel through the wet grass of meadows from one pond to another.

W. J. S.

BUTTER.

man-u-fac'-ture (L. manus, facio), <i>anything made by art</i>	op-e-ra'-tion (L. opus), <i>action, influence</i>
dis-turb' (L. disturbo), <i>to interrupt, to disquiet</i>	knead, <i>to work and press ingredients into a mass</i>
in'-flu-ence (L. influo), <i>moving power</i>	ex-tract' (L. extraho), <i>to draw out, to take from</i>
u-ten'-sil (L. utor), <i>a vessel or tool</i>	col'-an-der (L. colo), <i>a strainer</i>

THE butter I wish to tell you about is not the butter made from mud gathered in the London

streets, but real, good, wholesome butter, fit for food. But before we talk about the manufacture of butter, let us pay a visit to the dairy. It is a fine spring morning, about six o'clock, the milk-boy has already milked his cows, and brought in the pails; here stands the milk, and the pails have been scrubbed with water and sand till they are as white and bright as it is possible to make them. The milk as it stands there looks white and foaming, something like froth. The pans of milk stand upon shelves all round. The shelves are low, or the milk would be spilled when it is reached down, and the pans would have to be disturbed every skimming-time. Some of the pans have a thick cream upon them; these contain the newest milk; others have only a thin surface of cream; these contain the stalest milk. In the corner of one of the shelves stands a large can, called the cream-can. It is filled with a rich, thick, yellow cream.

The dairy is built in a place which is away from the influence of the sun, because the milk would soon curdle during the hot summer months if the dairy stood in a hot position. The dairy is washed every day during the warm weather, and this washing also helps to render it cool. The utensil used for skimming is flat, made of tin, and with holes in it, like a colander; it has also a handle fastened to it.

Now we have finished describing the dairy, we will talk about the making of the butter. The articles needed for this operation are a churn, a slate or marble board, weights, scales, and salt. The churn, before it is used, should be washed in the summer with cold water, and in the winter with warm. When the churn is properly washed, the cream is poured through a strainer into it; the churn is then carefully closed, and the handle is

either turned round and round, or beaten up and down until the cream has the appearance of being in little lumps. The churning process still goes on until the little lumps unite and form large ones, which are then taken out and placed upon the marble or slate. The lumps then require to be kneaded with the hands in order to extract all the butter-milk from them, for, if this were left in, the butter would very quickly turn rancid. When all the butter-milk is extracted, the butter is salted, weighed, and moulded into pounds and half-pounds. These are wrapped in damp linen cloths, and sent to the market or the grocer. If the butter is coloured, the powder used for colouring is put into the churn with the cream; sometimes it is coloured by scraping a carrot, and putting that into the churn. If the cows are fed upon carrots the butter will be of a bright yellow colour without using any colouring. The cream is skimmed from the milk twice a day, and each pan is usually skimmed three times.

E. B.

PARTS OF PLANTS USED AS FOOD.

an'-i-mal (L.), <i>a living and moving thing</i>	cor-rectly (L. corrigo), <i>rightly</i>
diff'-fer-ent (L. differo), <i>distinct, unlike</i>	re-mem'-ber (L. re, memor), <i>to call to mind</i>
as-par'-a-gus (L.), <i>a plant used as food</i>	fla'-vour (L. flaveo?), <i>to give taste or odour</i>

‘DICK, you are a very handsome canary, and I believe you are the very best singer in this town, but I think you are a silly fellow to feed on dry seed. Is it

because Dick is only a bird, mother, and does not know any better, that he likes to feed on dry seed ?'

'It is not because he is a bird only,' said George's mother. 'I know many animals that are not birds which feed on seed, whenever they can get them. What did you feed grandfather's pony with when you were in the country last autumn ?'

'Oh ! Jack liked oats or beans best,' said George. 'I often took some in a sieve, when I went into the field to catch him. He would run to meet me then.'

'And are not oats and beans seed ? So you see Jack is as fond of seeds as Dick, your canary bird. Many animals that are wiser than Jack, and can ask for what they want, feed on seeds.'

'Boys and girls, and men and women are the only animals that can ask for what they want, mother. I never knew that they fed on seeds.'

'What did you have for breakfast this morning, George ?'

'Bread and butter, and coffee. Sometimes we have cocoa. I see now what you mean. Bread is made of wheat, or rye, or barley ; and cakes are sometimes made of oatmeal ; and wheat, rye, barley, and oats are the seeds of different kinds of grasses. I saw the men in grandfather's barn beating these seeds out of their husks with a flail.'

'Yes, and some people use another seed to make bread or cakes ; it grows in warmer countries than ours, and is called maize. But dinner is ready now, and I think you will find very soon that you eat other seeds besides the seeds of corn.'

'I see,' said George, after he began to eat his dinner ; 'these green peas are seeds, and yesterday we had French beans, which are seeds too. But we eat the pod in which they lie as well as the seeds. I wonder if I shall eat any other seeds to-day ?'

'Here comes the rice pudding,' said George's

brother John, 'so I have no doubt you will. Little boys are very fond of rice pudding.' John had left school and gone to work, so he thought George was a very small boy indeed.

'Oh yes, rice is the seed that the people of India and China eat. It is the seed of a kind of grass, as wheat is,' said George. 'What a great number of people in the world eat seeds!'

'Now,' said John, 'I will give you the large kite that you wished to fly last summer if you can write down the names of those plants of which we eat the stalks only. You may run round the garden and see what is growing there before you try.' John thought that writing these names would be a very hard task for his little brother. But George worked hard at school, and could spell very long words, and now he came running in and wrote these words on his slate: 'We eat the stalks of rhubarb in pies and puddings, and of asparagus after they are boiled. And father is digging a deep trench for planting celery, which we eat in winter.' So you see George earned his prize, for he had written the words quite correctly.

George after this went on thinking about the parts of plants used for food besides the stalks and seeds. He thought he would begin with the lowest part of the plant, which is the root, and very soon he had quite a long list, for he thought of potatoes, which are part of the root of the plant, and turnips, and carrots, and parsnips, and onions, and beet-root, and radishes. And his father told him that tapioca, which was made into puddings, was the dried root of a plant called cassava, which only grows in very hot countries.

George then passed over the stalks and came to the leaves, but he could not think of any leaves of plants used for food, excepting leaves of the cabbage, spinach, lettuce, and leeks, which are a kind of

onion. All at once he remembered that shiploads of tea came from China every year, and tea, you know, is the leaf of a plant. Then his mother told him that the leaf of thyme, and mint, and sage, and many other herbs, were used to flavour food. 'Next to leaves comes flowers,' said George. 'We eat cauliflower and brocoli, which is something like cauliflower. And the cloves that mother puts in apple-pie are the buds of flowers that grow in the East India islands.' And now we have got to the fruit of plants. The fruit comes after the flower or blossom. Apples, plums, peaches, oranges, lemons, grapes, currants, gooseberries, and strawberries.

'I wish they all grew in the garden, and were ripe. I have thought now of all the parts of plants that are used for food.'

'Not quite all,' said John. 'We use the bark of one plant, and the juice of another, and the pith of another.'

George was puzzled, but after a long time he remembered that sugar was the sap or juice of a kind of cane, that cinnamon was the bark of a tree, and sago the pith of a kind of palm. George, you see, was a clever little fellow; he did not forget his lessons after he learnt them, and he found out a great many things for himself by thinking. S.

HAY-MAKING.

de scribe' (L. describo), to re- <i>present by words</i>	pen'e-trate (L. penetro), to <i>pierce</i>
var'i-a-ble (L. varius), <i>change- able</i>	tho'-rough-ly (S. thurh), <i>fully, completely</i>
slug'-gard, an idler, a lazy per- <i>son</i>	com-plete'-ly (L. compleo), <i>fully, perfectly</i>
in-ter-fere' (L. inter, fero), to <i>intermeddle</i>	oc-cu-pa'-tion (L. occupo), <i>em- ployment</i>

It is the month of June—a month less variable than April, not so fickle as May, and not so warm and sultry as July. A month when people can enjoy themselves without the danger of being nearly melted. A month when the birds sing the sweetest, and some of the prettiest flowers are in bloom. During this month let us pay a visit to the hay-field. To be able to enjoy our visit thoroughly we must be no sluggards. 'Up in the morning' must be our motto. The morning has come; by five o'clock we are ready for our visit, and we reach the field just as the men are entering from the other side. Let us have a good look at the meadow before they begin their work. How gracefully the long grass waves in the wind! how pretty the buttercups and daisies look! It seems almost a shame to interfere with them. But the men have begun their work; they have sharpened their scythes with their whetstones, and now they have commenced their labour. These scythes have soon laid low the long grass and the buttercups and daisies, and these are left in little ridges along the ground, while the men go forward with their work. In these ridges the grass will lie for some time, until the heat of the sun has dried it. Now the women will come, and with their forks will scatter the grass all over the field; thus, while the men go on with their mowing the women will keep on turning the grass over and over. When evening comes

all the grass will be made into little round heaps, and it will remain in these heaps all night. These heaps are made round because if the night happens to be a wet one the damp will roll down the side to the ground, whereas, if the heaps were flat, the moisture would penetrate into them, and the flavour of the hay would be spoiled. The first thing the men do when they return the second day, is to pull the heaps all to pieces and scatter the hay over the field again. During the whole of this day it is constantly turned over and over and tossed up and down with the forks, in order that all parts of the hay may be perfectly well dried. At the end of the second day the hay is again made into the round heaps. These heaps once more on the following day are spread about, but if the weather is fine the third day will perfectly dry the hay, and by the afternoon it will be ready to be carted. The field has to be well raked with long wooden rakes used for the purpose; then the hay is again made into heaps, and as the cart comes up these heaps are pitched on to it with the forks. The hay is then taken home and made into a stack, which is either of a round or a square shape. After the stack has stood for a day or two, it is covered up with a large cloth. If the hay is not thoroughly dried before being stacked, the damp will cause a great heat, and this heat will in time set the whole stack on fire. Many hay-stacks have been completely burnt down because the hay has been stacked when in a damp condition.

The season best suited for hay is when it is neither very wet nor very dry; for if too wet, the hay will be coarse and rank, and if too dry it will be thin and poor. The weather best suited for making it in is hot and fine, for if much rain falls after the hay has been cut all the flavour will be washed out, and neither cows nor horses will care to eat it. Hay-

making is really a very pleasant healthy occupation ; it gives good exercise for the arms and legs, and as the weather is not so very hot in June, it is not so tiring as harvest work. The work, too, is more agreeable than gleaning, because the body can be kept in an upright position, whereas in gleaning the body is constantly in a stooping posture. All children love a hay-field, and, as they cannot do the hay any harm, very few farmers object to their romping amongst it. How delighted they always seem when they can manage to tumble one of their number down and well smother him with the fragrant load, how they clap their hands and laugh to see his head come peeping out from the other side, how they try to prevent his escape even from thence, and feel only too happy if they can hem him in on all sides ! Certainly everybody should try some time or other during their lives to see a hay-field, for no language can half describe it. The men employed for this work are called mowers ; the other people employed in the field, whether men or women, are called makers ; and you would not wonder, if you could see them at their work, that they feel happy and gay.

E. B.

THE HARVEST FIELD.

boun'-ti-ful (L. bonus), <i>liberal,</i> <i>generous</i>	pro-vi'-sions (L. provideo), <i>food,</i> <i>things provided</i>
fa'-vour-a-ble (L. faveo), <i>kind,</i> <i>prosperous</i>	com'-fort-able (L. con, fortis), <i>giving comfort</i>
ar-rive' (L. ad, ripa), <i>to come to a</i> <i>place, to reach</i>	tho'-rough-ly (S. thurh), <i>fully,</i> <i>completely</i>
bev'-er-age (L. bibo), <i>drink,</i> <i>liquor</i>	cer'-tain-ly (L. certus), <i>without</i> <i>doubt</i>

AUGUST has come at last with its long hot days, with its fruit, with its beautiful flowers and with its bountiful harvest fields. Who does not love a corn-field!

Who, as he gazes on the golden grain mingled with the red poppies and blue corn-flowers, can help feeling that this is a beautiful world, and in spite of all the evil it contains there is very much in it which is very lovely! Let us pay a visit to these corn-fields at the end of the month. If the year has been what is termed a favourable one, the harvest has been gathered in. The reapers have been into the fields, and with their long sickles have cut down the corn. The gatherers have come with their bands, and have bound the corn into shocks and sheaves. The carriers have next arrived, and with their long forks have pitched these shocks and sheaves into the large waggons. These waggons have been drawn home, and the corn has either been put up into stacks, or piled up in the barn, ready for the threshing time. Now the fields are deserted. Wait a minute and watch. At the other end of the field is a gate; see, the gate opens, and in troop women and children; the fields to our eyes appeared empty, but if you watch you will soon find out that our judgment was mistaken. See, the people scatter themselves all over the field and begin their work. What are they doing? Only picking up the ears of corn the farmer's men have left behind them. These women and children are gleaners. Each of them has a small bag, tied in front, in which they put the ears which have no stalks or only very short ones. These bags are called ear-bags. Most of them have large sun-bonnets on which come a good way over their faces, and prevent the sun from scorching them too much. Some of them have old stockings on their arms; these are used because the short stubble is sharp and very much inclined to scratch the hands and arms which disturb it. All bring their dinner into the field with them; some have bread

and meat, some bread and cheese or bread and butter, and the very poor only bread. Even the babies and very young children are taken into the field and placed with the provisions, under some tree or hedge where a shadow is formed, and an older brother or sister is left to take care of them. How earnestly all of them seem to work, and yet with what different motives! That old woman there, who looks almost too feeble to be anywhere but in a comfortable arm-chair, is working away because she knows that unless she does her cupboard will very often be nearly empty during the long winter months; that mother, who now and then glances up to see if her precious baby is all right under the old oak-tree, feels that part of that baby's food depends upon the corn she is gleaning now; that young woman, who looks better dressed than most of them, gleans away because she likes to save all the money she can. The children too, work hard, at least for a time; the labour is new to them, and for the present they thoroughly enjoy it. How warm they all look! and no wonder, with nothing to shelter them from the sun but those thin sun-bonnets. How glad they will be of a rest! They certainly have all well earned it, and now they are going to get it. How glad the old woman seems to be able to rest her wearied limbs against the trunk of the aged tree! How delighted the mother seems to take her dear child once more in her arms and fondle and caress it! even the young woman is very glad of a little leisure time. But now they are going to begin their dinner; all seem hungry, and very glad of the food, if it is only bread; most of them are thirsty too; for this they are provided with little bottles of beer, cold tea or coffee, or some other liquid. After dinner some of the older people and the babies

will have a nap, and the children will have a capital game with the little crab-apples they have found in the hedges, or perhaps they will go hunting round the field to see if they can find any early blackberries or dewberries. We may be quite sure they want no sleep until their tired little limbs are safe in bed at night. When they are well rested the women and children will go to work again, till about four, then have another slight meal, then work again till about six, when the bundles of corn will be tied up in aprons or cloths, and the people go home to their tea. They must all be very glad of some good warm tea ; for all they have had during the day has been cold, and the beverage will certainly be very refreshing. Some of them will have some eggs and bacon fried, which will form a nice hot supper. The people glean in the fields until there is no corn left to glean, then all their gleanings are put together and the corn is threshed ; it is next sent to the miller to be ground, and many a nice little harvest cake, and big loaf too, are made from the corn gleaned in this way. E. B.

THE HISTORY OF A TEA-CUP, TOLD BY ITSELF.

de-com-po-si'-tion (L. de, com-pono), <i>a separation of parts</i>	ap-pro'-pri-ate (L. ad, proprius), <i>suitable</i>
dis-tinct' (L. distinguo), <i>different, clear, separate</i>	bis'-cuit (L. bis, coquo), <i>twice baked</i>
re-col-lec'-tion (L. re, colligo), <i>remembrance</i>	im-per'-vi-ous (L. in, per, via), <i>that cannot be passed through</i>
sus-pend'-ed (L. suspendo), <i>hanged</i>	trans-pár'-ent (L. trans, pareo), <i>that can be seen through</i>
dis-solv'-ed (L. dissolvo), <i>melted</i>	ex-am'-i-ner (L. examen), <i>one who searches into or examines</i>
pos'-i-tive-ly (L. pono), <i>certainly, absolutely</i>	pro-noun'-ced (L. pronuncio), <i>declared</i>
al-low'-ed, <i>permitted</i>	bur'-nish-er, <i>one that polishes or makes bright</i>
re-mon'-strate (L. re, monstro), <i>to make a strong objection</i>	

PEOPLE call me a *china* tea-cup, but I can assure my young friends that I have never been out of England. Sometimes, however, I am called porcelain. Both these names are given to the better kind of cups, such as I am. Before I was a cup I spent many a long year in the earth; indeed, I am entirely made up of two earthy substances, clay and flint. Not London clay, nor blue clay; only bricks, tiles, and common red ware are made from these. My clay is a beautiful white kind, called kaolin, or China clay; which is obtained by the decomposition of the felspar of the granite rocks in the neighbourhood of St. Austell, in Cornwall, and from the southern side of Dartmoor, in Devonshire. Although a long time ago, I have still a distinct recollection of the treatment I received, and will endeavour to describe it.

As the rocks in which I was hid began to decompose through the action of the air, I was washed out, and for a long time was kept suspended in the water; at last I settled at the bottom of the pans in which the water was put, the water was run off,

and I was made up into lumps and sent off to a place called Stoke-upon-Trent.

Soon after I arrived at Stoke, I was placed in a large tub of water, and stirred about until dissolved. Then a man brought a quantity of *ground flints*, and threw them in with me. As these particles were tumbling helter-skelter into my sides, I asked them a few questions, and from the answers I gathered that the flints, like myself, had had a nice quiet life for a long time, when one day a clever man thought they would be of great use in helping to make me a little more beautiful, and so they were carried away to Stoke-upon-Trent, and roasted—yes, positively made red-hot; and while in that state were cruelly thrown into a vessel of cold water; and to make the matter worse, were ground to powder in a mill. When reduced to a fine dust, they were mixed with water until they were about as thick as cream, and in this state they were, as I told you, thrown into the vessel with me. The quantity was about one-fifth of my bulk. Having put us together, we were then stirred up most unmercifully, so that after a short time it was not possible to discover that there were two of us. I was now called *slip*.

Of course I was much too thin to be made into a cup, so the cruel men put me into a vessel called a kiln, and boiled me until I lost nearly all my moisture. Presently I was removed and laid out in a nice smooth place, and allowed to remain for a long time. I thought that all my troubles were over, and that I should be allowed to live in peace. In this, however, I was mistaken, and one day a man came with a spade, cut a large piece out of my side, and commenced dashing me about in the most cruel way. When I remonstrated, he said there might be some air in me, and that if he did not press it out, when I was made into a cup I should crack. Of course I

had to put up with it. This operation is called *slapping*, a very appropriate name, I can tell you.

After this knocking about, the master said I was fit to be made into a cup, so I was given into the hand of the *thrower*, who placed me on the potter's wheel. I soon began to whiz rapidly round, and while in motion the thrower squeezed me into the shape of a cup, and hollowed me out with his thumb, and so I was fashioned into the proper form. Next I was carried into the *ware-room* and dried, and then put on a lathe and made smooth and neat. Next my handle was made and stuck on where you see it, and then I was carried away to be baked. Now I had many companions, for they packed a large number of us together in an earthenware box called a *seggar*, and this was placed in a kiln, a large fire was lighted, and we were made red-hot. In this state we were kept for fifty hours. When I was taken out and cooled they called me biscuit porcelain.

Had any of my young friends bought me in this state they would not have found me of much use, for as fast as they poured the tea into me, it would have soaked into my sides. On this account I was said to be porous. To take away this quality and render me impervious to water, I was dipped into a liquid mixture containing white lead and pounded flints, and then, fresh from this dipping, I was again put into a furnace, and kept there until the mixture melted, and formed itself into a transparent covering like glass. This covered all my pores, and this is why I can hold your tea. This operation is called *glazing*.

When I came out of the furnace I was beautifully white, but of course very plain; and so, as I was intended for a lady's table, the artists took me in hand and painted me in a most delightful way—flowers inside and out. The paints were

made from the oxides of metals, ground up and mixed with nitre and borax. Each colour was put on separately, and after each painting I was put into the furnace to fix the colour. When the painting was finished, I was given to the *gilders*, who put a kind of purple paint round my rim, and on some other parts, placed me in the furnace again to fix the gold, and when I was cold I was passed on to the *burnishers*, who rubbed the purple colour and made it shine just as you see it now. I was now handed to the *examiner*, who pronounced me well made and sound, and so I was sent to the lady who ordered me, and of course was very much admired.

J. H.

RICE AND MAIZE.

in-hab'-i-tants (L. in, habeo), <i>persons who dwell in a place</i>	al-ter'-nate-ly (L. alter), <i>by turns</i>
cul-ti-va'-tion (L. colo), <i>act of tilling, improvement</i>	nu-tri'-tious (L. nutrio), <i>having the quality of nourishing</i>
il-lus-tra'-tion (L. illustro), <i>explanation, by example</i>	an'-nu-al-ly (L. annus), <i>yearly, every year</i>
prim'-i-tive (L. primus), <i>first, ancient</i>	con'-ti-nent (L. contineo), <i>land containing many countries</i>
pro-lif'-ic (L. proles, facio), <i>productive</i>	fer-til'-i-ty (L. fertilis), <i>fruitfulness</i>
di-gest'-ed (L. digero), <i>dissolved in the stomach</i>	prop'-er-ties (L. proprius), <i>peculiar qualities</i>

With the exception of wheat, no corn is so valuable for our food as the seeds of rice and maize. Both are inhabitants of warm countries, but their place and manner of growth are very different.

Rice is supposed to have been originally a native of India, where an inferior kind is now found growing wild, but it has long been improved by cultivation, and has gradually been introduced into all countries whose climate is favourable to its growth. It is a plant that requires a great deal of

moisture to bring it to perfection, and flourishes best in marshy districts. Such places are chosen for its cultivation where the ground can be flooded with water. The usual mode is to sow it in rows, after which the ground is flooded for some days, and when the plants have sprung up some inches high it is flooded again, and so on alternately until the grain is ripe. The water is then allowed to run off and the rice is reaped. In some countries the seed is sown on ground covered with water, and here we have an illustration of the Scripture, 'cast thy bread upon the waters, for thou shalt find it after many days.'

When the rice is threshed, each grain is found to be cased in a brown husk ; this is removed in India, and other countries, by the primitive way of pounding it in a large mortar with a wooden pestle, but the improved method is by passing it between mill-stones which are set far enough from each other to crack the husk without crushing the grain.

Rice is a very prolific crop, yielding from fifteen to twentyfold, and in many countries two crops are grown in the year.

Rice is a wholesome food and easily digested, but it is not so nutritious as wheat and other corn, as it consists almost entirely of starch. In India it forms almost the entire food of the Hindoos, and in China the lower people eat little else. In this country more than 100,000 tons are consumed annually.

Maize, or Indian corn, is a native of America ; but since that continent was discovered by the Spaniards it has been introduced into other parts of the world, into Africa, and the southern parts of Europe. It will grow in this country, but will not ripen its seeds, for which great heat is necessary.

Maize grows with a thick, strong stalk like a reed, with long broad alternate leaves. The stem reaches the height of eight or ten feet, and at the top is a

bunch of silky flowers called from its appearance the tassel. These are the male flowers, and below them are the ears, which produce the corn. They are long and round, and covered over with seeds in close rows, and when these ears are in flower, there are a few silky threads hanging from the centre of each. These, as well as the male flowers, are in bloom at the same time, and the yellow dust called pollen falls from the latter on the ears below and thus secures their fertility.

Maize is also a very prolific crop, but it requires much manure, as from its strong growth it soon exhausts the ground. Its yield is usually from one to two or three hundredfold. It is a very wholesome food, and possesses great fattening properties. In America it is prepared in a great variety of ways, and is used at every meal. In this country, when ground and prepared, it is sold as corn-flour, and its use for puddings, custards, &c., is greatly increasing.

In Spain and Portugal and the Azores, the thin leaves which surround the ear, or cob, as it is termed, are used for packing oranges, one being wrapped round each.

W. I. S.

LIGHT AND COLOURS.

qual'-i-ty (L. qualis), <i>nature, property, disposition</i>	com-mu'-ni-ca-ted (L. com-munico), <i>imparted, bestowed</i>
es-sen'-tial (L. esse), <i>necessary, very important</i>	un-du-la'-tion (L. unda), <i>waving motion</i>
ex-is'-tence (L. existo), <i>state of being</i>	in-cred'-i-ble (L. in, credo), <i>unbelievable</i>
ab'-so-lute-ly (L. absolvo), <i>completely, positively</i>	dim-i-nu'-tion (L. diminuo), <i>lessening</i>
ab-sorb' (L. absorbeo), <i>'to suck up</i>	in-tense-ly (L. intendo), <i>to a great degree</i>

No quality of a body seems more perfectly to belong to its real and essential nature than its colour. The soft green of the grass, the glowing brightness of the rose, seem to be among the very realest of things. But this is not the case. These beautiful colours all depend for their very existence on the presence of light. It is thought by many who have studied the question that it is not merely that in the darkness we cannot perceive the colours, but rather that there is then absolutely no such quality existing in the bodies.

The capability of becoming coloured objects when light returns, is of course still existing in them, just as the capability of becoming solid is present in all water, and objects are no more coloured in themselves than water is in itself solid.

This appears strange, but it will be perfectly clear if we consider the nature of light. Every luminous body, as the sun, has its particles in a state of intensely rapid vibration. These vibrations are communicated to the others, and a series of waves or undulations then travels with incredible swiftness in every direction through the ether.

When these waves strike upon solid material objects, they may naturally be expected to undergo some change. In some cases they pass through the body with little diminution or alteration. This is

the case when they strike upon water or glass. In other cases the waves are simply thrown back or *reflected*, and travel on in an opposite direction. This is so when they strike upon polished steel and other such surfaces. But when they strike upon soot, or crape, or ink, the waves neither pass through, nor are reflected, but are altogether lost. The object is black because while light is streaming from other things around it, not a ray passes from it.

This black object is said to *absorb* the light which falls upon it, and it does so indeed as really as a sponge absorbs water. This is the explanation.

The particles that compose every material substance are capable of exceedingly rapid vibratory movements. The rate of rapidity is not the same in all, however. In general, the particles of every different substance have their own proper rate of vibration. And this rate of rapidity will, in most cases, exactly agree with that of one or more of the different coloured light waves. What we call a black object has different sets of particles whose different vibrations agree with the rapidity of all the coloured waves. Light then streams upon it; each wave gives a tiny impulse to its particles; they are set in motion, the undulations pass into the body, and the light is lost or absorbed.

A blade of green grass has particles agreeing in their vibration with red, and blue, and other waves, and these therefore pass into it and are absorbed. But it has no particles agreeing in their rate of vibration with the green waves, and these only are reflected to us. The greenness comes therefore from the sun, not from the grass; indeed, the grass might almost be said to be in its own nature rather red or violet than green.

We are thus led to look upon our world of coloured objects as a mighty assemblage of particles,

each capable of intensely rapid vibration, but each colourless. Into this colourless world the sun shines, pouring out its waves of light; and forthwith each particle is struck and trembles, and as an Æolian harp when blown upon by the wind yields beautiful sounds, so beautiful radiant light streams upon us from all things.

The ancients had a pretty fable that the sun and the other heavenly bodies made music as they rolled in their courses, and in this, as in many other things, they were wiser than they themselves knew.

R. McW.

ICE.

im-port'-ance (L. importo), <i>con-</i> <i>sequence, moment</i>	con-dense' (L. con, densus), <i>to</i> <i>make or grow more dense, or</i>
ex-pand' (L. expando), <i>to</i> <i>spread</i>	<i>thicker</i>
con-fec'-tion-er (L. conficio), <i>one who makes or sells sweet-</i> <i>meats</i>	dens'-i-ty (L. densus), <i>closeness,</i> <i>compactness</i>
grad'-u-al-ly (L. gradus), <i>by de-</i> <i>grees, step by step</i>	crys'-tal-lize (Gr. krustallos), <i>to</i> <i>form into crystals</i>
in-vis'-i-ble (L. in, video), <i>that</i> <i>cannot be seen</i>	part'-i-cle (L. pars), <i>a very small</i> <i>portion</i>
trans-par'-ent (L. trans, pareo), <i>that can be seen through</i>	tem'-per-a-ture (L. tempero), <i>states as regards heat or cold</i>
	lux'-u-ries (L. luxus), <i>dainties,</i> <i>things not necessary</i>

Who does not thoroughly enjoy a day's sliding or skating! How anxious boys and girls are to know whether the ice 'will bear' or not, as though it were a matter of very great importance to them! And not boys and girls only, but men and women too, rich and poor, old and young, forgetting for the time that they are men and women, and not minding the many tumbles they get, enjoy skating and sliding as much as younger folk do. You may

see the lakes in London and in other large towns crowded in frosty weather with people of all sorts, from the little boy and girl of three or four years of age, to the grey-headed old man or woman of sixty or seventy, all either sliding or skating themselves, or watching those who do.

But our business is to talk, not about skating and sliding, interesting and important as these may be, but about the ice upon which we skate and slide.

What is ice? Hold it before your eyes. You can see through it even if it come from a muddy pond. Give it a blow with a hammer and it is as brittle as glass (indeed, the French people call it glass, '*glace*'). Hold it a little while in your hand, or put it before the fire or the sun, and it is changed or thawed into water, from which, as you know very well, it was formed. You see the broken pieces float like boards on the water. Why do they float in this manner? You say correctly, that ice floats because it is lighter than water. But, since the ice is formed from water, why should it be lighter than water? Let us try to answer a few of these questions.

Suppose we take the phial bottle and glass tube, mentioned in a former lesson. Fill it with water, and then put the bottle into warm water. The heat expands the water in the bottle, and it rises up the tube. Now put the bottle into pounded ice or snow, which, if you live in a town, you can get from the confectioner's or the fishmonger's even in summer. If you mix salt with the ice or snow, so much the better, and you make what is called a freezing mixture. Put the thermometer also into the ice with the bottle, and watch them both carefully at the same time. The mercury stands, let us say at 60°. You see the water in the tube gradually sinking as the ice robs the water in

the bottle of its heat, and the mercury sinks too. Now the water ceases to sink and begins to rise. Note the mercury, which is at 39° . The water goes on rising and the mercury sinking, but presently the water stops altogether, and rises no more. You see its appearance has changed; in fact, it is no longer water, but solid ice. The water is frozen, and perhaps the bottle *broken*.

Now let us think a little about these things. First, we found that on heating the water in the bottle it *expanded* and took up more room; secondly, as the water cooled, it *condensed* or took up gradually less room; and, thirdly, when the mercury was at 39° the water began to expand again and to take up more room, until it became ice, and broke the bottle—that is, it condensed in cooling till it reached a certain degree of coldness, but *expanded* on becoming colder. Therefore, at 39° degrees of cold, or of heat if you like, the water took up less room than at any point above or below that. This point (39°) is called the *point of greatest density* of water.

But how is it that water expands on freezing? You have perhaps noticed that salt and loaf sugar are made up of little bits of regular shape called *crystals*. If you break a piece of cast iron you will find it made up of crystals too, between which there are little spaces. Now, I think you will be able to see that, if you break or melt down these crystals in any way, the salt, sugar, or iron will take up less room than before. Further, you will not have forgotten that snow is vapour frozen into beautiful starlike crystals, and you must often have noticed the exceedingly beautiful crystals of frozen dew on the grass and on the window-pane on a frosty morning.

Now, whenever water freezes, the globular particles of which it consists are built up into

beautiful starlike crystals like those of snow, and when so built up take up more room than they did before, as bricks take up more room when built up into a house than when they lie about or are stacked up in a heap. Thus you see how it is that water expands on freezing, and that a lump of ice, say a cubic foot, must be *lighter* than a cubic foot of water, and will therefore float on water.

This building up of water into ice is called *crystallisation*, and the force which crystallises water is so great, that scarcely anything can prevent, though it may hinder it. Hence it is that our bottle was burst, and that, during very hard frosts, such as we have in this country sometimes, the water-pipes in houses get burst, rocks are rent to pieces, and even iron bottles have been shattered by the force of freezing.

We have seen that as water cools it becomes heavier, till it reaches 39° of cold, when it again becomes lighter. Now, as the water on the surface of a pond gets cold and heavier it sinks down, and drives up the warmer water from below to be cooled and sink in its turn. And this goes on until all the water in the pond is of the same degree of heat or temperature—that is, 39° . When this has taken place, further cooling makes the water, as you have seen, lighter; it therefore cannot sink as before, but must remain on the top of the pond, where it in time forms a coat of ice of gradually increasing thickness, and this ice, not giving out heat very fast, keeps the water below from freezing, and preserves the animals in the pond alive.

You saw that ice, even from dirty water, was transparent. What is the cause of this? When the work of freezing or crystallisation is going on, air and every other substance are cast out as unfit to form part of the beautiful building; hence we get the ice clear.

Now, how can we undo this work of crystallisation, or take down the icy building? Heat will do it for us. We will first break the ice to pieces, put it into a saucepan, place the thermometer in it, and put the saucepan on the fire. The mercury reaches 32° , and the ice begins to melt; but, although we continue to heat the ice, the mercury does not rise above 32° , and will not until all the ice is melted, when it will start off again. What has become of all the heat of which the thermometer took no notice? It went to take down the icy building, but did not heat the water at all. Is all that heat lost then? By no means. It is stored up in the water ready to be given out when the water is again frozen.

Suppose now you take some fragments of ice and let them float on water. Bring them together one after another at their corners or edges. You see they freeze together, and you can draw them along as an icy chain, or you may make an ice wheel; so by squeezing a handful of snow, which, you know, consists of fragments of ice, for sometimes you may make a solid ball of clear hard ice, the fragments *freezing* together. But the snow must be about to melt, otherwise you cannot make a snow or ice ball.

We have seen that snow is continually being piled on the tops of high mountains, yet these mountains do not get any higher. Why do they not? Because the great weight of the snow above pressing upon that below welds it into ice and drives it down the mountain sides in the form of 'glaciers,' or ice rivers, which grind and polish the rocks over which they pass, and scoop out wide and deep valleys in their course. Such glaciers are to be found in the Alps and other high mountains. But Greenland is in great part covered with ice itself, and this ice is in some places pushed far out to sea, where it becomes

broken off and floats away as huge ice islands, or *icebergs*, hundreds of feet in height, into the warmer parts of the ocean, where they at last melt. Ships going from England to America in the early part of the year often meet with these icebergs, and are sometimes crushed by them.

By-and-by you will learn that not only were the glaciers of Switzerland far larger than they are now, but that our own mountains of Scotland, Cumberland, Wales, and Ireland have been covered with ice, and that icebergs have floated over many other parts of England besides.

Ice is a very useful article, and people have for many years stored it up in cool places in the winter that they may be able to obtain cooling drinks and other luxuries in the summer. But now it is used for preserving meat, fish, and other things, which the hot weather of summer would quickly spoil. You may see men carrying mackerel and other fresh fish about the streets of London, packed up in ice, which keeps them sweet and fresh. For this purpose large quantities are brought from Canada, Norway, and other countries.

J. H.

THE ENGLISH CONSTITUTION. (I)

in-trin'sic (L. intra, secus), <i>arising from itself, genuine</i>	le'-gis-la-ture (L. lex, fero), <i>the body of men who make laws,</i>
im-pair'-ed (L. in, par), <i>injured, lessened</i>	<i>parliament</i>
co'-ex-ist (L. con, ex, sisto), <i>to exist at the same time</i>	cor-o-na'-tion (L. corona), <i>the act of crowning</i>
un-lim'-it-ed (S. un, L. limes), <i>having no bounds</i>	ap-per-tain' (L. ad, per, teneo), <i>to belong to</i>
pre-rog'-a-tive (L. præ-rogo), <i>privilege</i>	tyr'-an-ny (Gr. turannos), <i>a despotic government</i>
cir-cum-scrib'-ed (L. circum, scribo), <i>limited</i>	de'-pu-ty (L. de-puto), <i>one who acts for another</i>

THERE is nothing more worthy of study by Englishmen of this age than the principles of their country's Constitution, not only on account of its intrinsic excellence, but because, since recent legislation in extending the franchise has committed its care in great part to the less educated section of the community, it may easily occur that the ancient landmarks of liberty may be swept away, and that our freedom may be transmitted narrowed and impaired to our descendants. The noble tree planted by our ancestors, watched and tended by them with so much care, and watered by the blood of so many illustrious men; which has outspread its arms over so many lands, and offshoots of which are growing in almost every clime, must be guarded with affection and veneration; and the laws affecting its growth must be known and studied if we would reserve it for posterity in its full vitality and strength. Its roots are deep and far-reaching, and although it be almost impossible to uproot it or to hew it down, yet there is some danger that in the desire to cut away excrescences and dead branches, some of its living limbs may fall and its symmetry and fair proportions be marred. Clearly, then, it becomes the

duty of us all to ascertain what is meant by our *Constitution*, to know the great laws of justice and freedom under which we live, and to understand the great efforts that have been made in times past in order to secure for us the inestimable blessings we enjoy.

By the term *Constitution* is meant the fundamental laws of government established by the supreme power in a State; which supreme power in all free States is the will of the people. To act in any way to the hurt of the sovereign power is treason, and under most Constitutions is punishable with death.

The Constitution of England, unlike that of the United States and some other countries, is not set forth in any written document, but has grown up gradually during many centuries, and is still in great part fixed only by the customs of our ancestors. The following, however, are its most important provisions:—

1. That the country shall be ruled by a Parliament consisting of an hereditary sovereign¹ and the three estates of the realm, viz: the Lords Spiritual, the Lords Temporal, and the representatives of the Commons.

2. That no tax can be imposed, and that no law can be made, altered, or abrogated but by Parliament.

3. That every Englishman shall enjoy the right of personal security and of personal liberty, unless after a trial by his equals he is judged to have forfeited them according to law.

4. That the king shall sell to no man, neither shall he deny or delay to any man, justice or right.

The sovereign power in every country naturally falls into two divisions, viz: the power of making laws, and the power of enforcing them or carrying

¹ Throughout these lessons called the king.

them into execution. The former is called the *legislative* power, and belongs to the Parliament; the latter, called *executive*, is entrusted solely to the king. It will thus be seen that the person holding supreme executive power, forms a part, and only one part, of the Legislature; and that this should be so is very desirable, indeed necessary, to preserve the balance of the Constitution. The union of these powers, whether in one person or in a body of men, is adverse to public liberty; since the magistrate is armed with authority to carry out in any manner whatever laws he may, as legislator, see fit to enact. On the other hand, if they were entirely disjoined it is difficult to imagine how they could long co-exist. One branch would certainly in the end draw to itself the power and functions of the other, and thus their union, or, in other words, tyranny would be the result.

Of the constituent parts of Parliament the highest in rank and authority is the king. He alone has the power of calling Parliament together, he alone has the right of dissolving it, and he sits there in his regal capacity as one of its branches.

The office of king (A.-S. *cyng*, *cyning*, a leader) is in England hereditary—that is, on the death of the holder, it goes to the next heir. It must not be supposed, however, that the nearest heir succeeds by a title which cannot be forfeited. By the Bill of Rights it is expressly provided that any person professing the Romish faith, or marrying a Papist, becomes absolutely incapable of inheriting the crown, and that any actual sovereign, by committing either of the same offences, at once ceases to be king and absolves his subjects from their allegiance. Moreover, the succession can be changed at any time by an Act of Parliament. When, therefore, we say

† the office of king is hereditary, we merely

mean that except by forfeiture on his own part, or unless the wisdom of the Legislature see fit to set him aside, the next heir succeeds. Of the king's children, preference is given to males in the order of their birth; but on the failure of male issue the crown descends to the eldest female. If there are no lineal descendants it goes to the next collateral relation of the late king. By the present law the crown is hereditary in the person that wears it.

The king, in virtue of his royal office, has a special pre-eminence over all other men in the kingdom, and great powers are entrusted to him by law. These form what is called his *prerogative*. Formerly the prerogative was much greater than it now is. Under our early Norman kings it was almost unlimited, and only after a long and severe struggle has it been circumscribed within its present limits. Among the particular powers which the king still retains may be mentioned the right of rejecting any measure that may be proposed in Parliament, the right of coining money, and of pardoning criminals, and the right of declaring war, of concluding peace, of sending and receiving ambassadors, and of making treaties. He is commander-in-chief of all the military and naval forces of the country, and therefore has the sole power of raising and ruling fleets and armies. He is the fountain of all justice and *the* magistrate of the country, all other magistrates being but his deputies. He has the management of the revenues of the State. He is also the supreme head of the Church of England, and hence he has the power of appointing bishops.

The law also assumes that the king is sovereign, and therefore cannot be sued for any injury he may have done, but must be petitioned in his Court of Chancery for redress; that the king in his political capacity is perfect and can do no wrong—*i.e.* that

he is not personally responsible for the acts of his Government; and that the king never dies, the heir succeeding on the death of a reigning prince to the instant possession of all his rights and dignities.

These vast powers confided to the sovereign for the benefit of the realm, must be exercised according to law. Such is the express declaration of the Act of Settlement, and in the coronation oath every sovereign solemnly promises and swears 'to govern the people of England and the dominions thereto belonging, according to the statutes in Parliament agreed on, and the laws and customs of the same; to the utmost of his power to cause law and justice, in mercy, to be executed in all his judgments; to the utmost of his power to maintain the laws of God, the true profession of the Gospel, and the Protestant Reformed religion established by law; and to preserve to the bishops and clergy of the realm, and to the churches committed to their charge, all such rights and privileges as by law do or shall appertain unto them or any of them.'

W. H. I.

THE ENGLISH CONSTITUTION. (II.)

ab'-so-lute (L. ab, solvo), <i>having power to rule without restraint</i>	grad'-u-al-ly (L. gradus), <i>by degrees</i>
civ'-il (L. civis), <i>relating to men as citizens</i>	le-gis-la'-tion (L. lex, fero), <i>the making of laws</i>
in-tel'-li-gence (L. intelligo), <i>understanding, knowledge</i>	tur'-bu-lent (L. turbulentus), <i>disorderly</i>
ex-clude' (L. ex, claudio), <i>to shut out</i>	sub-serv'-i-ent (L. sub, servio), <i>submitting to another</i>
ex-ag'-ger-ate (L. ex, agger), <i>to speak of a thing as greater than it really is</i>	ar-raign', <i>to place a man on his trial</i>
pol'-i-ty (Gr. polis), <i>form of government</i>	an-ces'-tral (L. ante, cedo), <i>relating to ancestors</i>
de-po-si'-tion (L. de, pono), <i>the putting a person or thing down from its place</i>	il-le'-gal (L. in, legalis), <i>unlawful</i>
	serv-il'-i-ty (L. servilis), <i>slavery, mean submission</i>
	par'-li-a-ment (Fr. parler), <i>the governing body of the nation</i>

THE founders of the English name and nation came from the northern shores of Germany and the banks of the Elbe. After their gradual conquest of the southern part of Great Britain, the various kingdoms thus established, into which they had introduced their own German laws and customs, were combined to form the kingdom of England. Their kings were not absolute, but were supposed to govern by the advice of the Witenagemot, or assembly of wise men—a council whose assent was necessary to the making of laws. The people were distinguished by their bravery and love of freedom: which latter quality they showed in nothing more than in their administration of justice, all suits being decided by themselves in their County Courts.

But whatever may have been the ancient liberties of the English, they were totally extinguished by the Norman Conquest. Doubtless the tyranny of the Normans has been exaggerated, but it is not the less certain that they formed the ruling part of the people, and that a large section of the English were reduced to a condition bordering on slavery.

This state of affairs, perhaps, was at its worst during the civil wars of Stephen. On the accession of Henry II. some improvement took place ; among other things, he appointed judges to travel through every county, that justice might be more speedily done.

At the Conquest the feudal system was established in England ; the distinguishing principle of which was that all the land of the country belonged to the king, and that it was granted to the holders in return for certain services. The chief of these were that they should assist their lord the king with their advice, and should follow him to war for a specified period. Those men who held land directly from the king thus formed the great council of the realm. Only the more important of these, or greater barons, appeared personally, the remainder choosing persons to represent them. The council advised the king on all great matters of State, and its consent was necessary to the enactment of law.

The tyrannical conduct of John at last determined the barons to take up arms. Led by Stephen Langton, Archbishop of Canterbury, they met the king at Runnymede, and forced him to sign Magna Charta, a declaration of all the most important of our liberties. Still the government of his son Henry III. was of a very arbitrary and oppressive character, and at length the barons, headed by De Montfort, Earl of Leicester, broke out into open war. The king was defeated and taken prisoner at Lewes, whereupon De Montfort called a Parliament to meet at Leicester, to which were summoned representatives of cities and boroughs. This was the origin of popular representation in Parliament, and from this time forward, with one or two exceptions, the Commons formed a constituent part of that assembly.

Step by step, during the succeeding reigns, the Commons advanced in power. The necessities of Edward I. arising from his long and costly wars, obliged him to meet his Parliament often, and although the citizens and burgesses, in all probability, were at first required to concern themselves with the Legislature no further than voting money, yet they gradually drew to themselves many other rights and privileges. Towards the close of the reign of Edward I. Parliament was divided into two Houses as at present; both Lords and Commons previously sat together, though it appears they always voted separately. During the reign of his three successors the Lower House assumed for itself the right to inquire into all departments of the Government, to impeach the king's ministers, and to require that all laws should have their assent; which privileges, after the deposition of Richard II., they confirmed and strengthened. In the turbulent period which followed, Parliament gradually became more subservient to the reigning king, a subserviency which became almost servility under the Tudors. But the Reformation, in liberating men's minds from the yoke of Rome, caused them also to turn their attention to the foundations of civil authority, and towards the close of Elizabeth's reign it was evident that, however it might be deferred by the prudence of that politic princess, there must, sooner or later, come a struggle between the power of the Crown and the liberty of the people. After various complaints and consequent dissolutions (when the most prominent members were sometimes imprisoned), Parliament in 1628 passed the Petition of Right, which expressly declares the levying of money without the consent of the Legislature to be illegal; but notwithstanding this, in 1634 the king, by his own authority alone, imposed a tax called Shipmoney on

the country. In 1640 the Long Parliament assembled, and immediately passed a law that it should not be dissolved without its own consent. The Earl of Strafford, chief minister of the king, was impeached of high treason and executed; the House of Commons drew up a remonstrance on the state of the nation, and Charles himself, in defiance of all parliamentary privileges, went down to the House to seize five of its leading members, who, however, had intelligence of his design and were purposely absent. Then commenced the great Civil War, in which the Houses, mainly through the genius of Cromwell, were victorious. The king, utterly vanquished at Naseby, gave himself up to the Scotch, by whom he was surrendered to the English; and at length, on the vote of the Independent party in the Commons (all other members being excluded), he was arraigned before the High Court of Justice, was condemned and executed. The regal office and the House of Lords were abolished as being dangerous to the State. A commonwealth was established with Cromwell at its head as Lord Protector, but during some years the country was in reality ruled by the sword. The military ascendancy and the despotic character of the Government grew so distasteful to the people, that, shortly after the death of Cromwell, Charles II. was invited to return to his ancestral throne. He entered London in 1660, and the old English polity was restored. The Commons, though at first extremely compliant with the king, at length made a stand against his Government, succeeded in passing the Habeas Corpus Act, and passed through their own House a Bill for excluding the Duke of York from the succession to the crown, on account of his religion. This Bill, however, was thrown out by the Lords; and on the death of Charles his brother succeeded without opposition, and immediately entered on a

course of arbitrary government. He claimed the right to dispense with the laws in the case of particular individuals, a power which, if largely exercised, would enable him to set all law at defiance. Unwarned by the fate of his father and the temper of the country, he resolved to persevere in his illegal measures, and in 1688 William of Orange, invited by some of the chief men of the country, invaded England, and proceeded to London. James fled to France, whereupon Parliament declared the throne vacant, and elected the Prince and Princess of Orange to fill it. King William and Queen Mary were proclaimed after giving their full assent to the Declaration of Rights, afterwards embodied in the celebrated Bill of Rights. In this instrument it is declared that it is illegal either to suspend or dispense with the laws, to levy money without the consent of Parliament, to keep a standing army in time of peace without the consent of Parliament, to question the freedom of speech in Parliament in any place out of Parliament, or to impose cruel and unusual punishments. It is also declared that the election of members of Parliament ought to be free, that Protestant subjects may have arms for self-defence, that juries shall be impartially selected, and that the sovereign shall neither be a Roman Catholic nor marry a Roman Catholic, in either of which cases his subjects shall be absolved from their allegiance.

These provisions were confirmed, and some others made, in the Act of Settlement, by which the crown, on the death of William, was settled on the Princess Anne, daughter of James II., and, in the event of her dying without children, on the heirs of the Princess Sophia, grand-daughter of James I.

Since the Revolution the House of Commons has been supreme in the State, and the Government has been usually carried on in accordance with the wishes

of the people. Scotland and Ireland have been united to England, and now send representatives to the Imperial Parliament of Great Britain and Ireland. By the Reform Bill of 1832, and again by that of 1867, the elective franchise has been extended and more power confided to the body of the people. The civil disabilities of Roman Catholics and others, except that papists are still precluded from succeeding to the throne, have been abolished, as have also most of the restrictions on free trade.

Such is our English Constitution, and such the progress it has made to the perfection of freedom we now enjoy. Founded on the broad and solid principles of the Magna Charta, it has risen stone by stone, through the persevering patience and patriotism of many generations of Englishmen; its remaining roughness and irregularities, which are only slight and superficial, must be removed with reverential care by their children: so shall we preserve for our children, in all its grand and majestic beauty, the noblest temple of liberty that the world has yet seen.

W. H. I.

THE ENGLISH CONSTITUTION. (III).

arch'-bish-op (Gr. archos episcopus), a <i>chief bishop</i>	qual-i-fi-ca'-tion (L. qualis facio), <i>that which renders a man fit to do anything</i>
im-peach' (L. in, pes), to <i>accuse of treason</i>	ro-ta'-tion (L. rota), <i>regular order</i>
prox'-y, <i>one who acts for another</i>	dis-cres'-tion (L. discerno), <i>free-will</i>
suf'-frage (L. suffragium), a <i>vote, choice</i>	he-red'-it-ar-y (L. hæres), <i>descending to the heir</i>
nom'-in-al (L. nomen), <i>existing in name only</i>	dis-sent' (L. dissentio), <i>disagreement</i>
mu-ni-ci-pal'-i-ty (L. munus, capio), a <i>city or corporation</i>	el'-i-gi-ble (L. eligo), <i>worthy to be chosen</i>
de'-le-gate (L. de, lego), <i>one chosen and sent to represent others</i>	co-erce' (L. coerceo), <i>to compel</i>

THE second branch of the Legislature, the House of Lords, is next in rank to the Crown. It consists of the two estates of the Lords Spiritual and the Lords Temporal, who, however, vote as one body.

The Lords Spiritual, twenty-six in number, have been declared by the House of Lords itself to be only lords of parliament, and not peers. They consist of the two archbishops and the twenty-four bishops of the English Church, and until lately included four bishops of the Church of Ireland. One English bishop, according to a rotation which does not include those of London, Winchester, and Durham, has no seat in parliament, neither has the Bishop of Sodor and Man.

The Lords Temporal comprise the titled nobility of England, including dukes, marquises, earls, viscounts, and barons, to the number in all of about 380; 16 peers chosen from the body of the Scotch nobility to represent it in each Parliament, and 28 representatives of the Irish peerage. The Scotch lords, who are elected only for one parliament, and the Irish, who are chosen for life, were added to the House of Lords at the union of Scotland and Ireland with England, previous to which each of those

countries had a parliament of its own. Scotch peers are now no longer created, but the king may make British peers at his discretion.

The President of the House of Lords is the Lord Chancellor, who is not, however, as is the Speaker of the House of Commons, charged with the maintenance of order, neither does he decide in what order members are to be heard. These matters are settled by the House itself, to which, and not to the Speaker, members in speaking address themselves.

The House of Lords forms a body of hereditary legislators, whose influence ought to modify the greater activity of the Commons and to serve as a check on the hasty making of laws. All measures may be introduced by the lords, except money bills and bills relating to the privileges of the other House. Every peer has the right of voting by proxy, that is, of commissioning another lord to give in his vote during his absence; he has also the privilege of entering his dissent from a vote of the House on its journals, together with the reasons for his dissent. The House of Lords is the highest court of justice in the kingdom, and an appeal lies to it from the other courts. Peers and persons impeached are tried before it; but each member, when sitting in judgment, gives his verdict, not upon oath, but upon his honour.

The remaining part of the Legislature, often denominated the Lower House, is of a somewhat different character, and consists of representatives of the third estate of the realm, viz., the common people. The total number of these representatives is 658, of whom some are chosen for counties, some for boroughs, and some for the universities.

When the sovereign has determined to assemble

a Parliament, writs are issued by order of the Lord Chancellor, directing the sheriff of each county to cause members to be elected for the county itself, as well as for all the cities and boroughs it contains. A day is appointed for the election, the superintendence of which, as regards the counties, devolves upon the sheriff, and as regards the boroughs on the returning officer of the municipality. Should there be more persons proposed as fit and proper persons to represent the place in Parliament than are to be returned, a poll of the electors is taken, each of whom, on presenting himself, is required to give his name, the qualification in right of which he votes, and the name of the person for whom he votes. This last is done secretly, and is called voting by ballot. Those candidates who have obtained the greatest number of votes are declared by the sheriffs, and in borough elections by the returning officers, to be duly elected.

It is of the highest importance in order that the sense of the country may be fairly represented in Parliament, that each voter should be perfectly free in his exercise of the suffrage. To this end all acts which would tend to coerce or to unduly influence an elector in his choice are strictly forbidden; soldiers quartered at the place of election are marched out at least one day before it takes place, to the distance of two miles or more, and must not return until one day after the poll is concluded: bribery, the giving of anything with a design to procure votes, is punishable with fine and imprisonment, and renders an election void.

Every person elected to serve in Parliament becomes a member of the council of the whole nation and a representative of the people, not a mere delegate of the inhabitants of the place for which he is chosen, whose interest he is not so much bound

to consult as the welfare of the kingdom of which they form part. It is his duty so to vote as he shall think most conducive to this end ; and he is, therefore, not bound to advise with his constituents concerning the course he will adopt, although he may take their opinion if he sees fit.

No member of the House of Commons can be dispossessed of his seat except by a vote of the House declaring his unfitness, which vote in no wise renders him incapable of sitting in any future Parliament should he be elected to do so ; nor can any member resign his seat. He may, however, vacate it by taking office under the Crown, but is eligible for immediate re-election. If he wishes to give up his seat, it is usual for him to accept the nominal office of Steward of the Chiltern Hundreds.

Each House of Parliament has certain powers and privileges that it may protect its members and maintain its authority. The chief of these belonging to the Commons are: the exclusive right to originate money bills, such bills not being subject to amendment by the Lords; freedom of speech and debate, which is claimed by the Speaker at the commencement of each Parliament; freedom of the members from arrest, except in cases of treason, felony, or breach of the peace ; and the right of impeaching before the House of Lords, not only any of their own body, but any lord of Parliament.

W. H. L.

THE ENGLISH CONSTITUTION. (IV.)

ma-jor'-i-ty (L. major), <i>the greater number</i>	re-con-sid'-er (L. re, considero), <i>to consider over again</i>
an'-nu-al-ly (L. annus), <i>happening every year</i>	re-ject'-ed (L. rejicio), <i>refused</i>
pro-ro-ga'-tion (L. prorogo), <i>continuance of Parliament from one session to another</i>	af-firm'-a-tive (L. affirmo), <i>agreeing, consenting</i>
col'-league (L. colligo), <i>a partner, one who is joined with another in an office</i>	neg'-a-tive (L. nego), <i>refusing, denying</i>
de-sig-na'-tions (L. designo), <i>names</i>	ad-journ' (Fr. à jour), <i>to put off from one day to another</i>
o-ri'-gin-ate (L. origo), <i>to begin</i>	sub'-se-quent (L. subsequor), <i>following</i>
	dis-so-lu'-tion (L. dissolve), <i>a breaking up, destruction</i>

THE method of proceeding in one House differs very little from that observed in the other. Each House is bound by the decision of the majority in it, and is presided over by its Speaker, who, in the Commons, is chosen by the House, but must be approved by the King. The Speaker has, in the Lords, the right of giving his opinion and vote on matters before the House; in the Commons he may not discuss, but in the rare case of the numbers for and against any measure being equal, he has the casting vote.

In the Lords any peer, and in the Commons any member, after obtaining the leave of the House, may bring in a bill. The bill is drawn up on paper, with blanks or italics where anything occurs that is uncertain, such as precise dates or sums of money; and on the member presenting it being ordered by the Speaker to bring it up, the question is put, 'that the bill be now read the first time,' which is rarely opposed. A day is appointed for the second reading, and the bill is entered in the 'order-book.' On the day appointed, the member who originated the bill moves 'that the bill be now read a second time,' when, if the principle of the

measure is disapproved, an amendment is moved that the word *now* be omitted, and that instead be inserted *this day six months*, or some other time until which the session is not likely to be continued. If, however, it passes the second reading it is referred to a committee, which, in important measures, is formed of the whole House, and in which its provisions are debated, amendments made, and sometimes the bill entirely recast. After it has gone through committee it is reported by the chairman to the House, and each clause and amendment is discussed; sometimes new amendments added, and the whole bill reconsidered. It is then read a third time, after which it is seldom amended. The Speaker now puts the question, 'that this bill do now pass.' If the House agrees to this, the title is finally settled, and the member who has charge of the bill, attended by several others, carries it to the bar of the House of Lords, where it is treated in the same manner as in the Lower House. If rejected, it passes from further consideration; if agreed to, the Commons are informed thereof by message; if amended, it is sent down to the Commons, with the amendments, for their acceptance. The same forms are observed when the bill originates in the Upper House, except in the case of an *Act of Grace*, which is first signed by the King, is read only once in each House, and must either be rejected or accepted as it stands. When any bill is finally agreed to by both Houses (unless it is a money bill, which is sent back to the Commons, and is retained by them until presented by their Speaker to the Sovereign), it is deposited in the House of Lords until it receives the royal assent;¹ by which it becomes a Statute or Act of Parliament.

¹ Given in the words 'Le Roy le veut'—*The King wills it*; or if by the Queen, 'La Reine le veut'—*The Queen wills it*.

Questions are determined in both Houses of Parliament by a majority of votes. When the question is put, each member in the Upper House cries *content* or *non-content*; in the Lower House *ay* or *no*, according as he is for or against the measure. The Speaker then declares that the *ayes* (or *noes*) have it. Either side may then call for a *division*, when those members for the affirmative go into the right lobby, and those for the negative into the left, the numbers for each side being taken by *tellers* appointed by the Speaker.

Parliament, when once summoned—which can only be done by the King—exists until its dissolution. Either House may, however, by its own authority, discontinue its sitting for a day, or even for a much longer period. This is called an *adjournment*, and is merely the continuance of the session from one day to another, business being simply suspended during the time. The King may at any time put an end to a session of Parliament by *prorogation*, when all unfinished business (except an impeachment by the Commons) is at an end, and must be recommenced; if at all, in a subsequent session. Notwithstanding an adjournment or prorogation, Parliament may be summoned by proclamation to meet the King, notice of the day of meeting being given at least fourteen days beforehand.

A *dissolution* is the breaking up of the Parliament, and may be caused by the King's will, by his death, or by length of time. Seven years has been fixed as the utmost period of duration for one Parliament, so that, if not sooner dissolved by royal authority, at the expiration of that time it ceases to exist by law. By a law of Charles II. it is enacted that not more than three years shall elapse between the dissolution of one Parliament and the summoning

of the next; but the Mutiny Act, and some other statutes being passed but for one year, it is found necessary to assemble the Legislature annually. The authority of Parliament, as expressed in its statutes, is absolute and supreme. It is competent to bind the King, to change the established religion of the State, to alter the succession to the throne, nay, even to change its own constitution and that of the State. Therefore it is of the very highest importance that the men to whom is confided the great trust of representing the nation should be men of learning and uprightness, that they may deliberate wisely and act faithfully for the good of the country, there being no remedy against the sovereign power of Parliament.

The heads of the chief departments of State appointed by the King in virtue of his possessing the supreme executive power, form what is called the *Ministry* or *Government*. Most of these, in right of their office, have seats in the Cabinet Council (part of a still larger one entitled the *Privy Council*), and so are constituted Advisers of the Crown, for whose acts they are responsible to Parliament.

The great body of the English people have long been politically divided into two parties, holding different views of government and society; one restless, searching, advocating change, or, in its own language, progress; the other, for the most part, jealous of any change in the Constitution or mode of government. These parties have at various times gone by different names. Formerly they were Whigs and Tories; now they are Liberals and Conservatives, the latter designations, however, being supposed to be applied to advocates of a policy somewhat milder than the former. Most members of Parliament are elected to represent the distinctive opinions of one of these parties, and as the Ministry

is chosen from the leaders of one of them, it will be seen that one set of members is pledged to support, and another to oppose the Ministry, although there are a few independent members. So long as Government possesses the confidence of the Sovereign and of the people, that is, practically, so long as it can secure a majority in Parliament, it continues to hold office; but should the Opposition succeed in defeating it on any important measure, or in passing a vote of *no confidence*, it resigns. Moreover, it is the duty of any member of the Government who differs seriously in opinion from his colleagues to resign, otherwise he would incur the responsibility of having advised acts of which he disapproved. The chief Ministers, who have also seats in the Cabinet, are The First Lord of the Treasury (usually Prime Minister), The Lord Chancellor, The Secretary of State for War, The Secretary of State for Home Affairs, The Secretary of State for Foreign Affairs, The Secretary of State for India, the Chancellor of the Exchequer, The First Lord of the Admiralty, and The President of the Board of Trade.

W. H. L.

THE ENGLISH CONSTITUTION. (V.)

in-ca'-pa-ble (L. in, capio), <i>unable</i>	arb'-i-tra-ry (L. arbiter), <i>wishing</i>
a-bridge' (Fr. abréger), <i>to lessen,</i>	<i>to rule by one's own will without</i>
<i>to shorten</i>	<i>considering others</i>
com-mit'-ment (L. committo), <i>a</i>	pre-scribe' (L. prescribo), <i>to</i>
<i>sending to prison</i>	<i>order, to dictate</i>
spe'-cies (L.), <i>a kind</i>	con-fer' (L. confero), <i>to bestow, to</i>
birth'-right, <i>a right with which we</i>	<i>give</i>
<i>are born</i>	prob'-i-ty (L. probitas), <i>upright-</i>
en-croach'-ment (Fr. en, croc), <i>unlawful intrusion</i>	<i>ness, honesty</i>

If we consider man in a state of nature, that is, living alone and independent, we shall find that all the *rights* with which he is born, and of which no

one is entitled to deprive him, resolve themselves into one thing—liberty. This liberty consists in having power to act as he thinks proper, and to go where he chooses, without any other restraints than those of the natural law—a right given us by God when he conferred on us the faculty of free-will. Man, however, is incapable of living alone. Everywhere he feels the necessity of company, and of joining with others for mutual help and safety. Thus, regulations and laws are rendered necessary, and a part of his natural freedom is willingly given up, in consideration of the benefits obtained by him from society, in order that that society may be made secure. It is a duty, therefore, that each man owes to the society to which he belongs, to obey the laws it has established, though he has the right to require that these laws shall not abridge his natural liberty more than is necessary for the general advantage of the community. Indeed, all laws that are not needful for the well-being of the State, that restrain us in the exercise of our free-will, and that prescribe our conduct in matters of no importance, are tyrannical, whether they are enacted by a king or by the people.

The English laws are singularly careful of the rights of the people. At times, indeed, arbitrary kings have stretched their prerogative so as to encroach on them, but the people, so far from quietly submitting, have usually made answer either with the sword or by a declaration of their liberties in Parliament. Tyrannical government led to their wresting the Great Charter, to the Petition of Right, and to the Revolution with the establishment of the present Royal family on the throne.

What these *rights* are may be collected from one of the principal clauses of Magna Charta, which is their first formal declaration, and in which it is pro-

vided that 'no free man shall be taken and imprisoned, or disseised, or in any ways destroyed, except by the judgment of his peers, or by the law of the land.' From this it is evident that our rights may be considered as of three several kinds: the right of personal security—'no free man shall be in any ways destroyed;' the right of personal liberty—'no free man shall be imprisoned;' and the right of personal property—'no free man shall be disseised,' i.e., dispossessed of his property.

The right of personal security consists in the title of every man to enjoy his life, limbs, and reputation, unless he shall forfeit them according to law. Whatever is done by him in defence of his life or members is considered as arising from the greatest necessity, and even if it amount to killing the person attempting them, is looked upon as a justifiable action. He is likewise entitled to be secure from wounding, assault, bodily insult, and from such practices as tend to destroy his health and to cause him annoyance.

The second great right of every Englishman is that of personal liberty, or the power of removing his body to any place he may choose without any hindrance or restraint, except by course of law. This is most jealously guarded by various English laws, and especially by the Habeas Corpus Act passed in the year 1679. This celebrated statute enacts that any person detained, upon whatever pretence (except for treason or felony), can, on a written application being made in his behalf, obtain from the Lord Chancellor or one of the judges a writ of Habeas Corpus, directing the gaoler to bring his prisoner before him within a period of twenty days; and, on the return being made, shall discharge the prisoner if bailable, on his giving security to appear and answer the accusation in a court of

justice. That persons charged with treason or felony may demand to be tried at the next sessions after commitment or to be admitted to bail, and if not tried at the second sessions to be discharged. That no person shall be re-committed for the same offence. That no person shall be sent prisoner to Scotland, Ireland, or any places beyond sea ; and that anyone who shall violate this provision shall be visited with very heavy penalties, and be incapable of the King's pardon. From this it is manifest that neither the King nor any other person can detain in prison any British subject, except in such cases as imprisonment is warranted by law.

Imprisonment may be defined to be the act of restraining a person's liberty against his will, so that it may be effected by confining him in any place, and even by forcibly detaining him in the street or high road, for which an action may be brought against the parties offending.

The third right belonging to an Englishman is that of enjoying whatever property he may have lawfully acquired, free from all interference except by law ; which right our Constitution carefully protects. An Act of Parliament is necessary for the imposition of even the most trivial tax. Neither, without the same authority, can a man be dispossessed of any property, even when his refusal to part with it occasions public inconvenience. In such cases, indeed, Parliament usually compels him to give up what is wanted, but never without awarding him its full money value.

These are the principal rights belonging to the English people, and it is obvious that, so long as these are preserved entire, the nation will enjoy freedom ; since every species of tyrannical government must attack one or other of these. That we may defend them from encroachment, we have the

further right to send representatives to Parliament, to apply to the courts of justice for redress of injuries, to petition the King or either House of Parliament, and lastly, to have and to use arms for self-defence.

'All these liberties it is our birthright to enjoy entire, unless where the laws of our country have laid them under restraints; restraints in themselves so gentle and moderate, that no man of sense or probity would desire to see them slackened. For all of us have it in our choice to do everything that a good man would desire to do, and are restrained from nothing but what would be pernicious to ourselves or our fellow-citizens.'

W. H. I.

THE ENGLISH CONSTITUTION. (VI.)

un-an'-i-mous-ly (L. unus, animus), <i>with one mind</i>	an-ti'-qui-ty (L. antiquus), <i>age, time long ago</i>
va-ca'-tion (L. vaco), <i>a holiday</i>	plaint'-iff (L. plango?), <i>one who brings an action at law</i>
de-fend'-ant (L. defendo), <i>one who has to defend himself against a charge or action at law</i>	ju-ris-dic'-tion (L. jus, dico), <i>authority</i>
man'-i-fest-ly (L. manifestus), <i>clearly</i>	obs'-o-lete (L. obsoletus), <i>gone out of use</i>
par-tial'-i-ty (L. pars), <i>an inclining to one side in giving judgment</i>	puis-ne (Fr., pron. puny), <i>inferior in rank, younger</i>

THE law of England, 'the rule of civil conduct prescribed by the supreme power in the State,' may be considered as of two kinds—the *lex scripta*, or written law, and the *lex non scripta*, or unwritten law.

The written law consists of statutes made from time to time by Parliament, and printed in our statute-books by its order. Of these the oldest at present existing is the confirmation of the Great Charter in the ninth year of Henry III. A statute

continues in force from the date fixed for the commencement of its operation, until such time as it shall be repealed by Parliament ; and has the effect of rendering void all preceding statutes to which it may be in opposition ; the most recent, of course, expressing the will of the Legislature. Sometimes a statute, by long disuse, loses its force, and is then said to be obsolete.

The unwritten law, or, as it is usually denominated, the common law, consists of customs which have been handed down from our ancestors from time immemorial, and which depend for their authority on length of usage and not on any existing Acts of Parliament. These customs may be learned from the records of the courts of justice, in which are preserved the decisions of the judges ; which decisions, in the absence of any statute on the matter, are regulated solely by common law, and when similar cases occur are considered, unless manifestly unjust or absurd, as of binding force.

The common law probably derives its name from the fact of its being the ordinary law by which all suits and proceedings in the King's courts of justice were regulated, and that which naturally came into operation unless set aside by statute law. Some writers refer its origin to a period long before the Conquest, and Alfred is often credited with its most salutary provisions. But in all probability its antiquity does not extend beyond the reign of Henry II., and whatever right or custom can be shown to have existed from the time of Richard I. is held to be good at common law.

The law is administered in the King's courts of justice. Originally there was but one superior court for the despatch of all public business. This court, called the *Aula Regis*, or King's Court, was held in his palace, and consisted of his great officers of state.

It soon split up into sections, which form our present courts of law. Each of these consists of judges who are appointed by the Crown, but who may not be removed except on an address of both Houses of Parliament.

1. The Court of King's Bench. This is the supreme court of common law in England, and takes its name from the fact that the King used formerly to sit there in person, though it does not appear that he ever sat there as a judge. It consists of a Chief Justice, who is styled Lord Chief Justice of England, and four puisne (inferior) judges; and takes cognizance both of pleas of the crown—that is, of those crimes and misdemeanours in which the King is the plaintiff, and which extend from high treason downward—and of civil causes, or actions between one subject and another. Although this court has for some ages held its sittings at Westminster, yet, in case of the King's command, it may follow him to any place in England. Its jurisdiction is very high, and restrains from transgressing the bounds of their authority all inferior tribunals, whose proceedings it may order to be carried before itself.

2. The Court of Common Pleas is another of the great courts of common law, and also consists of a Chief Justice and four puisne judges. It takes notice of civil causes; as, for instance, actions concerning property and the like, and all actions of this kind may be removed hither from the inferior courts. This court is stationary, and sits always at Westminster; since it was enacted in Magna Charta, 'that Common Pleas shall not follow our court, but be held in some certain place.'

3. The Court of Exchequer, another branch of the Aula Regis, originally superintended only such matters as related to the King's revenue. It is the lowest in rank of all the four great courts sitting at West-

minster, and is divided into two parts, one of which has jurisdiction in matters of revenue, and the other is a court of common law. The judges of this court are styled Barons, and are five in number, the first being called Lord Chief Baron.

4. The High Court of Chancery, the most important of the various courts of law, is divided into two parts, only one of which is a court of common law. If matters of fact are disputed they cannot be tried in this court by jury, but must be sent to the King's Bench.

In addition to these we have Courts of Equity, in which are decided all cases that cannot be reached by the ordinary course of law, as well as those in which the law, pressing with undue harshness and severity, requires to be moderated by the rules of reason. They are the High Court of Chancery, presided over by the Lord Chancellor, and the Court of the Exchequer Chamber. An appeal lies from their sentence to the House of Lords, whose decision is final.

All these courts sit for despatch of business during certain portions of the year, which are called terms. These are four in number, viz.—Hilary Term, which begins on the 11th and ends on the 31st of January; Easter Term, which begins on the 15th of April and ends on the 8th of May; Trinity Term, which begins on the 22nd of May and ends on the 12th of June; and Michaelmas Term, which begins on the 2nd and ends on the 25th of November. The periods between the terms are called Vacations. Twice every year the judges travel through the country on circuit, and hold sessions in the chief town of each county for the trial of criminals and of civil suits. These sittings are termed Assizes.

In order that justice may be impartially administered, the determination of cases is left to a

jury composed of twelve men, who are sworn to declare the truth according to evidence. There are three kinds of juries at present in use in England, viz.—grand juries, petty juries, and special juries.

Grand juries are only summoned in connection with criminal courts. Their duty is merely to consider whether the accusation is supported by sufficient evidence. If they think not, the accused is discharged, otherwise they are said 'to find a true bill,' and he is then tried by a judge and ordinary jury. Grand juries may consist of any number from twelve to twenty-three, but at least twelve must agree in finding a bill.

Ordinary juries consist of twelve men only, and are used for trying both civil and criminal causes. One of their number is chosen foreman or speaker, and witnesses are examined on oath before them. When the evidence is concluded, the jury usually retire to a room by themselves to consider their verdict. Having come to a decision, to which all of them must agree, they re-enter the court, and the verdict is delivered by their foreman. In criminal cases this is either 'guilty' or 'not guilty'; in civil suits the verdict is given 'for the plaintiff' or 'for the defendant.'

Special juries are summoned to try causes in which, from the nature of the evidence, greater intelligence is required than can be expected from ordinary jurymen. They usually consist of twelve gentlemen of good education and position in life.

It is of the utmost importance that jurors should give their verdict according to the evidence brought before them, and should not be biased by any partiality or dislike. To this end each juror is sworn to give a true verdict according to his conscience. Moreover, the person accused may object to any particular person sitting on the jury. This objection is

termed a 'challenge,' and if a reason be shown, as for instance a former quarrel, the juryman challenged must be set aside. Any number may be challenged for reasonable cause assigned; and in certain criminal cases, jurors to the number of twenty may be challenged without showing cause at all. The value of trial by jury, as a safeguard of liberty, cannot be overestimated. Though the penalty of crimes is settled by law, and the passing the sentence awarding it is entrusted to the judge, it yet rests with a jury to decide whether a man is or is not guilty, and no man can receive punishment for a grave offence until twelve of his equals and fellow-countrymen have unanimously decided that he deserves it.

W. H. I.

UNION OF THE ENGLISH AND IRISH PARLIAMENTS.

leg'-is-late (L. <i>lex, fero</i>), <i>to make or enact laws</i>	se-di'-tion (L. <i>se, eo</i>), <i>factions, turbulent</i>
re-pre-sen'-ta-tive (L. <i>represento</i>), <i>one who exercises power given by another</i>	ob-nox'-i-ous (L. <i>ob, noceo</i>), <i>exposed, liable, odious</i>
in-i'-qui-tous (L. <i>in, sequus</i>), <i>un-just, wicked</i>	in-sur-rec'-tion (L. <i>insurgo</i>), <i>a rebellion, a sedition</i>
ju'-bi-lant (L. <i>jubilo</i>), <i>rejoicing, joyful</i>	e-mol'-u-ments (L. <i>e, mola</i>), <i>profit, advantage, gain</i>
dem'-a-gogue (Gr. <i>demos, ago</i>), <i>a popular and factious orator</i>	e-qua-nim'-ity (L. <i>æquus, animus</i>), <i>evenness of mind</i>

THE present mode of legislating in the House of Commons for England, Ireland, and Scotland, and the common privileges enjoyed by the three nations, is a child of the present century. England and Scotland had been governed by a single Parliament from the time of Queen Anne, and for some centuries Ireland had been treated as a conquered

country, bound to accept the fiats of England, without being privileged to send representatives to Parliament. No surprise will be occasioned in these days of thorough freedom, when it is said that the people of the Emerald Isle exhibited intense dissatisfaction, and in their unsettled state were prone to rebellion.

The whole of the Irish male population had been armed, with the sanction of the English Government, in order that they might the more forcibly cope with France, which latter power was ever ready and willing to bring about, by warlike operations, the separation of Ireland from England. The increasing confidence of the Irish people in their own strength had begotten a feeling of self-dependence which prompted them to menace England with desperate violence, no less than 80,000 armed men rising up to demand that their country should be governed by a native Parliament, and that certain iniquitous restrictions on their commerce should be removed. In response to this demand, it was decreed that a separate government should be established, the English Parliament claiming to exercise a veto on all their decisions, as a kind of Board of Control; and, in accordance with this decision, an independent Parliament was elected in the year 1782, and continued for eighteen years, the representatives meeting in the city of Dublin.

The people were naturally jubilant at this change. They had long accounted themselves as little better than slaves to the King of England, nor did even this feeling die out under the new order of things, inasmuch as three-fourths of the people were Roman Catholics, and were denied many civil and religious liberties which were accorded to the remainder, who were Protestants. The long-cherished wild revenge which had been pent-up in the Irish heart was par-

tially subdued, but it burst forth in various volcanic shocks whenever hope or prospect of success was apparent. Secret fomentations on the part of agitating demagogues and a disaffected priesthood were not wanting, help from France was both promised and given, and secret societies abounded in almost every town and village for developing sedition and treason against the English throne.

Not a single Roman Catholic was allowed to sit in Parliament; Orangemen (Protestants) made themselves obnoxious to all who worshipped at other altars than those of the Church to which they were attached, and Ribandmen (Roman Catholics) manifested the utmost abhorrence towards them. The result was a continual state of agitation; outrages on both sides were of almost everyday occurrence, street battles ensued on every point of religious difference, and rebellion kept the country in a state of constant terror. The efforts of the English to make the Protestant Church acceptable were vehemently resisted by the Irish; and the payment of tithes and church dues was deemed an abomination. The Roman Catholics broke out in open rebellion in 1798, and were assisted by a French expedition, but in every engagement the King's troops were victorious, and the insurrection was quelled, the rebels routed and punished; and a large number of the conspirators arrested.

Pitt, who was then Prime Minister of England, concluded that the only means of allaying the outraged feelings of the people, or at least, of ending the troubles which had been thus thrust upon the country, would be the union of the English and Irish Parliaments, a proposition which was protested against by all the leading patriots of that country, as a measure for dragging them to the lowest depths of degradation, and for crushing their liberties in

the last degree. The time for sharp and decisive action appeared to have come, and not a stone was left unturned to accomplish the desired result—that of placing the control of Ireland entirely under English management. The opposition which had been raised was disarmed by bribery and corruption: English gold poured into the laps of one-half of the Irish members to purchase their support.

This procedure proved successful. The two Parliaments were ultimately united in 1801, Ireland being granted the right to be represented in London by 32 native members in the House of Lords (28 of whom were to be elected for life, the other 4 being archbishops and bishops who were to attend the House in a particular rotation for certain periods), and the boroughs and counties to send 100 members to the House of Commons, both England and Ireland to enjoy equal dignities and emoluments.

Although this measure promised to bring peace and political equality to Ireland, the people could not be induced to look upon the change with equanimity, their feeling being faithfully represented by the words of their leading orator—Grattan—who exclaimed, in reference to the Parliament of his native land: 'I watched its cradle, and followed its bier.'

The more moderate and sensible portion of Irishmen have recognised wisdom in the change; for, despite the many agonising throes which the present century has witnessed in that country, peace and commercial prosperity never flourished so well as they have done since the union of the English and Irish Parliaments.

E. H. B.

IRELAND AND CATHOLIC EMANCIPATION. —ABOLITION OF CORPORATION AND TESTS ACTS.

on'-er-ous (L. onus), *burdensome*
re-strict'-tion (L. re, stringo), *limi-
tation, confinement*
a-mel'-io-rate (L. ad, melior), *to
improve, to make better*
ab-o-li'-tion (L. aboleo), *the act
of annulling or destroying*
ac-qui-esce' (L. acquiesco), *to com-
ply*

e-lec'-tri-fy (Gr. elektron), *to ex-
cite suddenly and greatly*
en-thu'-si-asm (Gr. en, theos), *ar-
dent zeal*
e-man'-ci-pa-tion (L. e, manus, ca-
pio), *to set free*
as-pi'-rant (L. aspiro), *one who
desires a thing, a candidate*
co-a-li'-tion (L. coalesco), *jun-
ction, union in one body*

BLEST with civil and religious freedom, we are apt to ignore the struggles and grievances of our forefathers in darker times. With the terrors of the French Revolution not only striking deeply into the roots of French society, but inflaming this and other nations, and the fierce wars in which we were engaged to prop up tottering continental thrones, the early portion of the present century (and the few years preceding) is fraught with more interest than any other period of modern times. During the first twenty-nine years, Roman Catholics were subjected to inconveniences to which modern religionists of all creeds are strangers, and these fell more onerously on the people of Ireland, the great majority—three-fourths—of whom were Roman Catholics.

During the previous century, a severe Penal Code had been constructed, not entirely by any individual monarch, inasmuch as it was the patchwork of several reigns. The hatred which had been manifested towards the religion of Roman Catholics extended also to their civil and social affairs, because it was considered that the profession of their religion necessarily influenced their relation to the State and society, and the people themselves were treated as aliens, and almost as slaves. Thus the majority of

the Irish were looked upon with contempt, and they, in turn, revolted, feeling their position even more than did the Roman Catholics of England. When the 'No Popery' cry was at fever height, no Papist could own landed estates, either by descent or purchase, nor even lease land for a longer period than thirty-one years. If an estate were left to a Papist, the latter could not claim the property; it went to the next Protestant heir, as though the Papist were dead. Any Protestant becoming a Papist was deemed guilty of high treason, and even the teaching of Roman Catholicism was declared to be a felony, punishable with a year's imprisonment. Papists were not allowed to sit on juries, to sit in Parliament, or vote at elections, and difficulties were put in their way even against their being suitors-at-law. With a view of making Protestantism the more acceptable, popish priests were offered 30% per annum, for life, on renouncing their religion.

Although the rigour of these laws had been considerably abated, the fact of their existence on the statutes, and their enforcement being still a legal act, rankled in the breasts of the Irish, and a fierce insurrection (aided by assistance from France) had been consequently waged for a year or two, and put down with strong force. In 1779 and 1793, laws had been passed enabling Papists to vote at elections, but the very few who accepted the privilege were hampered with many restrictions, such as having to register their religious profession, take oaths, make declarations and subscriptions, &c. Even then, they were not allowed to sit in Parliament. For eighteen years before this century commenced, the Irish had been allowed to have a Parliament of their own, its management being confided to them, merely subject to the King in Council; but a large number of Orangemen being included in its composition, it did

not satisfy the people, and this was the more immediate cause of the rebellion of 1798-9, which was attended with much bloodshed and military execution.

Pitt, who was then Prime Minister, succeeded in passing a law, in 1800, for uniting the English and Irish Parliaments, to sit in London, admitting a large number of bishops, peers, and commoners to represent Ireland. This Act was condemned by many Irish patriots as being the last dregs in the cup of their degradation, but the more enlightened men of that country have since admitted that it was the first great step towards ameliorating the political, social, and commercial evils of the sister isle. The chief annoyances to which the people were subjected were those attending their estrangement on account of religious differences; and to the abolition of these Pitt directed his attention, and proposed to pass the Catholic Emancipation Bill, to enable all of His Majesty's subjects to be put on an equal footing. The King, George III., stoutly refused to accede to this proposition, in consequence of which Pitt resigned office, believing that nothing short of such a measure would soften the public dissatisfaction. The fearful continental wars which were then beginning to be waged engrossed men's minds for a long period, and turned their attention from the question of Catholic emancipation; but the people of Ireland never flagged in pushing their claims through their representatives in Parliament: indeed, Grattan, who entered the House in 1805, and remained a member till the time of his death in 1820, never ceased to champion the cause, but took a division almost every year, and, on the last occasion, lost it by only two votes. This showed the gradual growth of public opinion in favour of the proposed change.

In 1828, Daniel O'Connell appealed to the voters of county Clare to return him as their member to the House of Commons, in opposition to the Government candidate, Mr. V. Fitzgerald, and declared that although he was a Roman Catholic, and consequently not entitled to take his seat in the House, he would show the most bigoted of his enemies the necessity of removing the obstacle. The address electrified the people, O'Connell's eloquence inspired the electors with wild enthusiasm, and at the close of the election the high-sheriff declared 'Daniel O'Connell, Esq., duly elected.' The agitation for emancipation had been provoked and encouraged for years by an association formed in Dublin, tracts and circulars were distributed broadcast, Parliament had been crowded with petitions, the realm had rung with the appeals of orators, and now the time of earnest trial had arrived. The House was not then sitting, but a declaration was made that ministers would oppose Mr. O'Connell's entrance. When the session was opened on March 5, 1829, Mr. Peel moved that the House go into Committee to take the question of the civil disabilities of Roman Catholics into consideration, and after a debate of two days a Bill was introduced. Mr. O'Connell pleaded at the Bar of the House for his right to be admitted, and argued his own case with great ability and eloquence. The King had consented to the Bill being passed, and after a severe struggle in the Commons, Mr. Peel carried it to the Lords, where it was forced through by the Iron Duke (Wellington); both of these illustrious men having now yielded. From that day, Roman Catholics have had the right to sit in Parliament, and a train of other benefits have followed in the wake.

THE CORPORATION AND TESTS ACTS.

The cry of 'No Popery' which rang in every Protestant household in the reign of Charles II. indicated how Protestants and all Nonconformists feared the reintroduction of Roman Catholicism amongst the governing classes. The Church of England being the direct outgrowth of rebellion against papal power, her protection was deemed the necessary focus of legislation even in preference to the complete liberty of those who chose to worship without the recognition of either King or Pope. Nonconformists generally consented to be disqualified as aspirants to official positions, and to be bracketed with the Papists in order that the latter might have no ladder by which they could again climb to power. In fact, the Dissenters hated Romanism more heartily than they prized immediate legal equality, and were induced to acquiesce in the establishment of an Act forbidding them to become members of corporations, rather than risk, by coalition with the Papists, the overthrow of the Protestant Church, the maintenance of which latter was deemed of the greater importance. Allegiance to the Church of England and the acknowledgment of her supremacy were conditions of holding offices under government or corporations.

A kindred measure was that known as the Tests Act, which made it imperative to make a declaration against the papal doctrine of transubstantiation, in order to hold civil or military offices, to have the rights of suitors-at-law, to receive any legacy, to receive university education, and for various other state privileges. And the proof of the religion of aspirants to these benefits was exacted in legal courts by solemn oath, as well as by the production of certificates signed by Protestant ministers

and churchwardens, as to attendance at church and the receipt of sacrament.

As Nonconformists grew more numerous and influential during the early part of the present century, they naturally appealed, by agitation, to be placed in the position which had been promised to them in consideration of the truce their forefathers made in the reign of Charles, i.e. that their disabilities should be removed so soon as the return of papal power appeared to be impracticable. The demand provoked much opposition, but the fear of coalition between Nonconformists and Roman Catholics, coupled with the increased spirit of toleration which had been developed by the growing enlightenment of the people, rendered the passage of a measure less difficult than would have been the case at an earlier period. For some years the rights of Dissenters were more or less recognised, their penalties being rendered nugatory by annual pardons and indemnities granted in Parliament; still this was unsatisfactory. Lord Russell, in February, 1828, moved 'that the House do go into Committee to take into consideration' the question of abolishing the Tests and Corporation Acts, which was accordingly done, and in a very short period the bark which had been tempest-tossed for more than a century and a half was carried into harbour on the crest of a long agitation. In a House of 430 members, the measure received a majority of 44 votes, over which the nation generally rejoiced.

E. H. B.

THE REFORM BILLS OF 1832 AND 1867 AND THE ABOLITION OF THE CORN LAWS.

ar-ro-gance (L. ad, rogo), <i>assumption of undue importance</i>	syn-on-y-mous (Gr. sun, onoma), <i>having the same meaning</i>
ma-jor-i-ty (L. major), <i>the greater number</i>	de'-sig-nate (L. designo), <i>to name, to distinguish</i>
ag-ri-cul'-tu-ral (L. ager, colo), <i>relating to agriculture</i>	ne-go'-ti-ate (L. negotium), <i>to transact business</i>
mi'-grate (L. migro), <i>to remove from one place to another</i>	con-stit'-u-en-cy (L. constituo), <i>the body of electors</i>
fran'-chise (Fr. franc), <i>the free right of voting in the election of parliamentary representatives</i>	del'-e-gate (L. delego), <i>a deputy, one sent to act for another</i>

'Tis the talent of our English nation
Still to be plotting some new reformation.'—*Dryden.*

HE who finds pleasure in studying Reform Bills is not unfrequently accounted a political enthusiast of the deepest dye; still, the subject teems with thrilling interest, not exceeded even by that of the 'dreadful harmony of war.' During several centuries the laws of this country were made, and the people governed, by the King, who often acted despotically and tyrannically; and the baronial landowners, the latter of whom sometimes dictated to the monarch in a manner which justified the adage, 'Uneasy lies the head that wears a crown.' The farmers, merchants, tradespeople, and peasants had no share in law-making, their duty being simply to obey. As will be seen in the preceding lessons on the constitution, Magna Charta in King John's reign, and the political exigencies of the reign of Henry III. tended to check the undue influence, power, and arrogance of the barons, and to establish the system which is now, in a more extended sense, enjoyed under the name of the House of *Commons*—the *commoners*, i.e. the people in lower stations of life than those of the King and barons, being privileged

to elect members to attend to their interests in Parliament.

But the elective franchise was little better than a mere farce as regarded the majority of the people, or even of the middle classes alone, up to the year 1832. It is true that 658 members sat in the House of Commons, but they were not all sent there by the choice of the people. In some cases a rich nobleman possessed large tracts of land, on which were several small towns privileged to send amongst them eight or ten members to Parliament. Commercial changes, such as the opening of coal-fields in other parts of the country, the establishment of large manufactories, such as cotton-mills, ship-building yards, weaving-factories, and the thousand and one different industries of the northern towns, caused the population to leave the agricultural districts for more profitable employment, and thus many boroughs whose inhabitants had formerly sent representatives to Parliament now became utterly deserted, while other places, which had formerly been almost uninhabited, and for that reason were not accounted as capable of electing representatives, were then becoming populous. By this changed position of affairs, a town having only a single inhabitant continued to elect one or two members, just as it had done before its former residents had migrated, and the new town, although it could now number its thousands, was powerless to exercise the franchise just as it was when its broad green face was known only to the hunter and his prey.

No wonder, then, that localities which had (as regards their population) fallen into decay, and yet were recorded on the rolls as having powers which were not accorded to places teeming with life, wealth, and industry, should have been designated 'rotten boroughs.' The most notable among these

was one called Old Sarum: not a soul had resided there since the Tudors ascended the throne (a period of nearly 400 years), not a single house had reared its head from the time when Columbus discovered America, and yet in 1832 this 'rotten borough' sent as many members to Parliament as did the whole of Lancashire with a population of a million and a half of people. And this class of evils formed by no means the greatest grievance. A single elector, who had the sole power of returning a member, would frequently sell his privilege to a money-lender, a rich merchant, or any aspirant to parliamentary fame who could afford to pay down the required sum of money; indeed, the negotiation was not always effected privately, but sometimes by public auction. An East India Prince (the Nabob of Arcot) once owned a sufficient number of boroughs in this country to enable him to return 20 members to Parliament, and negotiated through his agent in England, without even taking the trouble to attend personally. Certain places, having a population of only 5,000 people, returned, amongst them, 100 representatives, while Leeds, Birmingham, Manchester, and other important towns sent not a single member; and less than 200 persons of high positions actually elected a majority of the House of Commons.

It must be admitted that this system, however unequal as a matter of just representation of numbers, had the effect of securing some of the greatest mental ornaments of the country as Parliamentary representatives. Brougham, even, entered the House as a member for Old Sarum, the rottenest of all rotten boroughs, although he closed his representative career as the member for one of the largest of the constituencies; Burke, 'the Sublime,' and many of our greatest orators, owed their introduction to Parliamentary life to close corporations.

That the public should have held indignation meetings, and have agitated by establishing associations for ringing their appeals throughout the land, is not a matter for surprise. Orators in and out of Parliament fought a verbal battle for and against a bill which was brought in by Lord Russell in 1831; the people assembled in thousands to parade their grievances, marched in processions, and hoisted banners and flags on which were displayed mottoes and watchwords. The bill provided for the *disfranchisement* of some boroughs which had become tenantless or corrupt, the *enfranchisement* of others which had become populous, and the *extension of the suffrage* to residents of boroughs who paid as much as 10*l.* per annum in rent, or those who paid 50*l.* per annum in counties. The number of members (658) remained the same, but they were distributed differently; the ultra-rotten borough system was to be abolished; 56 boroughs were to be struck off the list of enfranchised towns, and 31 partially so; 41 new boroughs were added, some to return two members and others one; the large cities and counties were to have an increased number of representatives. By this proposed change it was supposed that half a million of people would be added to the electoral list. This scheme produced an electric effect throughout the country, and the champions of the previous system were smitten with horror, deeming it to be an unwarrantable revolution in representation. Separate bills were brought in for England, Ireland, and Scotland; that for England passed (with some slight modifications) after an agitation of three weeks, by a majority of 109 votes, and the others were soon also recorded on the statute book. This was in 1832. These Acts formed one of the largest concessions in the direction of the liberty of the people that had ever been granted since the

days of the Magna Charta of John, and effected the greatest political change that had been witnessed since the time of the Commonwealth.

REFORM BILL OF 1867.

The Act previously referred to, although satisfying the larger portion of the people at that time, naturally failed to meet the altered condition of affairs at a later stage, when education and enlightenment had been extended among the humbler classes. The growth of commerce expanded the ideas, aspirations, and electoral fitness of the working classes to an extent which entitled them to share in the right to return members to Parliament. Between the years 1852 and 1867 no less than six bills had been introduced for the purpose of placing various classes of people on the register of voters, each of them being defeated by the opposition of some strong objectors, except on the last occasion, when a common feeling was exhibited by all classes of politicians in favour of settling the question. A sweeping measure was ultimately adopted, introduced by the then Prime Minister, the Right Hon. B. Disraeli, the leader of the Conservative party, by which every householder (however small the rent he might pay), and every lodger paying rent for rooms of not less than 10*l.* unfurnished, should have the privilege of voting in boroughs; and also every householder paying not less than 20*l.* in counties. Thus, nearly every man of the age of twenty-one in boroughs has become electorally free, and also an extensive section of those in counties.

ABOLITION OF THE CORN LAWS.

‘Bread is the staff of life,’ and a dear loaf is synonymous with half-famine to the poorer classes. In the early portion of the present century—indeed,

up to 1846—cheap bread was almost unknown. The bulk of our lawmakers being landowners, selfishness prompted the maintenance of a system which favoured farmers in securing as high a price as possible for their corn, and enabled the landowners to charge higher rents to their tenants. To encourage high prices and large profits among agriculturists, a heavy duty was imposed on all foreign corn received at our ports, and thus, in the case of a bad harvest, famine was almost a necessary consequence, to avoid which affliction, encouragement had to be given for importing corn in proportion to the scarcity of that grown at home. But the certainty of a large profit was always ensured to the farmer, inasmuch as the duty on foreign corn was made sufficiently heavy to prevent his being undersold, the charge on foreign grain being varied in proportion to the price exacted by the farmers for the time being.

In 1837 the Anti-Corn Law Association, with Richard Cobden at its head, was formed, the sum of 3,000*l.* being deposited to defray its expenses. An agitation for abolishing the Corn Laws was commenced, delegates were sent to lecture in various large towns in favour of the movement, and pressure was brought to bear on members of Parliament. The Reform Bill of 1832 having extended the electoral privilege to the commercial and middle classes, a large number of manufacturers and merchants were now returned to Parliament; and, consequently, fewer landowners; which increased the prospects of success for the agitators. Opposition was not wanting among those who profited by the existing system; and many others who failed to see the benefits of the proposed change for an almost free importation of foreign corn; but many of even the leading protectionists foresaw that to maintain the heavy

restrictions much longer would be dangerous to the public welfare, and even Peel and Wellington, who had long been ranked among these, manifested a like wisdom to that shown by them on the question of Catholic Emancipation seventeen years before. One of the severest struggles on public questions during this century resulted in one of the greatest triumphs for the public weal; free trade in corn was declared to be the high commercial road to national prosperity, the Corn Laws were abolished in 1846, and similar measures in furtherance of various branches of industry have been gradually and variously adopted.

E. H. B.

VOTE BY BALLOT.

u-nan'-i-mous (L. unus, animus), <i>being of one mind</i>	op-po'-nent (L. oppono), <i>one who opposes</i>
can'-di-date (L. candidus), <i>one who competes for an office</i>	in-ves'-ti-gate (L. investigo), <i>to enquire into</i>
con-sci-en'-tious (L. conscio), <i>re- gulated by conscience</i>	co-er'-cion (L. coerceo), <i>restraint, check</i>
e-ject' (L. ejicio), <i>to cast out</i>	ten'-ta-tive (L. tento), <i>trying</i>

To understand clearly the meaning of Vote by Ballot, it is necessary to be acquainted with the causes which led to its adoption. Englishmen are by no means unanimous in their approval of secret voting; many still retaining their admiration of the former plan—that of openly declaring the name of the candidate of their choice. The two sides of the question may be very briefly stated. Let us suppose that a borough has to elect one member to represent the people in Parliament, to make known their wants, wishes, feelings, and interests, and to assist in making laws in accordance with their opinions. Suppose, also, that there are two gentlemen equally anxious to be

electd : it is clear that one will be returned, and the other rejected. The mode of determining which of the two is deemed the better suited, in the estimation of the people, is that of the voters recording their opinions, some for one candidate, and some for the other. If there are more persons voting for A than for B, it is clear that A is the greater favourite with the people, and he accordingly takes his seat in Parliament.

Formerly, elections were conducted amid great excitement, and lasted for many days. The names of all persons having the right to vote were recorded on a register, and the agents of the candidates spent large sums of money in seeking out the voters (many of whom might live at a great distance), paying their railway or coach fares to and fro, driving them in carriages to the polling-booth, and in some cases bribing them with large sums of money to vote for certain candidates. As every elector had to call out the name of the gentleman for whom he voted at the polling-booth, there was no difficulty in proving whether they kept faith, and the names of all the electors, with the names of those for whom they voted, were afterwards published. Thus, a rich man, who was willing to spend freely in buying votes, had a much surer chance of being elected than his less wealthy opponent, or one who had conscientious objections against such a practice. Four boroughs became so notorious in this respect, that, evidence respecting the wholesale receipt of bribes by large sections of the electors having been given before judges appointed to investigate the cases, they have been prohibited from sending any more members to Parliament.

Many other objectionable and indefensible schemes were adopted for securing votes in support of particular candidates, such as inviting men, who had no

fixed political principles, to join the ranks of a particular side, lodging them in beerhouses for several days prior to the election, and keeping them there in a state of intoxication, lest they should be induced by the offer of a higher price to join the opposite party. Then, in this condition, they were led like cattle to the polling-booth, and, on being questioned as to the candidate of their choice, had to be told by the agent having charge of them what name to utter. Further, tenants sometimes suffered loss and inconvenience by being ejected from their farms or houses for having voted in opposition to their landlord's wishes; working-men, for similar reasons, were apt to lose their situations, and tradespeople many of their customers.

The Ballot Act was passed under the premiership of the Right Hon. W. E. Gladstone in 1872, so that every elector now records his vote secretly, by putting into a ballot-box a piece of paper on which the names of all the candidates are printed, but on which he has crossed out the names of those whom he does not desire to be elected. At the close of the poll, which lasts only one day, an officer, appointed for the purpose, counts all the papers, and declares that person elected whose name is most frequently recorded. Thus there can be no coercion, for the choice of the elector is not made public. The objection raised against this plan, by admirers of the former system, is that a man may profess to vote for one candidate while actually giving his support to another, thus being a political hypocrite and guilty of falsehood, besides not giving candidates a fair chance of guessing their prospects of success, or of testing whether their constituents have been true to their promises.

E. H. B.

DISESTABLISHMENT OF THE IRISH CHURCH—ELEMENTARY EDUCATION ACT.

su-per-sti'-tion (L. *supersto*), *religious belief or practice not sanctioned by the Scriptures*
 ci-vil-i-sa'-tion (L. *civis*), *the act of civilising*
 in-ca-pa'-ci-ty (L. *in, capio*), *inability*
 ar'-ti-san (L. *ars*), *a mechanic*
 a-re'-na (L.), *a public place for competition*

phi-lan'-thro-pist (Gr. *philos, anthropos*), *a lover of mankind*
 dis-sem-i-na'-tion (L. *dis, semen*), *the act of spreading or scattering*
 ap'-a-thy (Gr. *a, pathos*), *want of feeling*
 vol'-un-ta-ry (L. *volo*), *free; acting by choice*
 me-trop'-o-lis (Gr. *meter, polis*), *the chief city of a country*

THE fact that Ireland and England were governed by the same laws was deemed a logical reason that a uniform religion should be encouraged and maintained by the same means in both countries. In addition to this fact, the general feeling in England was in favour of maintaining in Ireland the machinery for upholding and strengthening the Protestant Church as the Scriptural religion, as well as that most favourable to true progress and liberty. On the other hand, the Irish having inherited Roman Catholicism, which was the common religion of the land before they were subject to English laws, and still holding contempt for English rule, maintained a dogged opposition to the overtures of their conquerors, in which they were both secretly and openly encouraged by the priesthood. Toleration under the two opposite religious systems appeared to be hopeless, the Roman Catholics preponderating to such an extent that in many parts of the country the Protestant clergyman could not secure a congregation, except that constituted by his own family and servants, while the Roman Catholic chapel of the same parish was filled to excess. Although this was not the case throughout the whole country, it was sufficiently so to place the disaffected people in a decided majority. Orators fanned the spark of dissatisfaction

into flames, pleading that to be compelled to pay tithes and church dues in support of a religion to which three-fourths were conscientiously opposed was a national injustice; and these sentiments were echoed by large masses of the people, and made to do duty in a political sense as well.

With a view to pacify the Irish on this question of general complaint, a Bill, introduced into Parliament by Mr. Gladstone, the Prime Minister, was passed in 1869, which provoked intense dissatisfaction amongst his political antagonists. By this Act the connection of every clergyman with the State was severed, and the churches were made self-supporting so far as national interference was concerned. The ministers of the various churches were privileged either to receive at once a sum of money equal to their incomes for ten years, or to take a life annuity of an equal value, calculated by the tables adopted for purposes of life assurance. The lands and properties held by the Church went to the Crown, and the Crown became responsible for meeting these payments.

The proposed separation was a source of much bitter feeling at the time, neither party being entirely satisfied with the scheme in detail. Time, however, has already softened some of the asperities of the case, and afforded some satisfaction to both sides; for many of those who opposed the disestablishment of the Church in Ireland now indulge in the hope that their religious principles may find increased favour among Roman Catholics; while the latter may be disposed to look on their Protestant friends and neighbours with less dislike, now that what they declared to be an injustice has been removed.

THE ELEMENTARY EDUCATION ACT.

Ignorance and superstition once prevailed so widely that the clergy alone had the advantages of

education, and to them we are indebted for the maintenance of those rich stores of learning which have been the means of advancing the world to its present state of civilisation. Even kings and knights disdained to learn to write, and so general was the incapacity to write a letter that some few of the more educated men followed the occupation of scribes, having stands or tables at street corners, where they acted as correspondents for such persons as needed and were able to pay for their services. The invention of printing stimulated education and made learning popular among the upper and middle classes ; but the humbler orders knew but little of even reading, writing, and arithmetic at the early part of the present century. Two earnest promoters of education among the poor—Bell and Lancaster—introduced schemes for extending knowledge to the children of artisans, and the principle of admitting all children to the arena of knowledge was warmly espoused by an association of philanthropists termed the National Society for the Education of the Poor, who have been the means of establishing schools, at very low fees, in almost every parish of the land, in addition to founding Training Colleges in which to instruct and train masters and mistresses in the art of teaching. This widely-extended scheme, on the principles of the Established Church, was preceded by the successful efforts of the British and Foreign School Society to found schools in which the Holy Scriptures were read, but no distinctive creed was taught. These were broadly termed British schools. Great as has been the success of these institutions, an immense number of children have, nevertheless, grown up without any education, owing to the apathy or poverty of their parents, and to other causes.

As some other nations had adopted the system of

compelling every child to attend school for a given number of years, so that the people might enjoy all the blessings of enlightenment, it became necessary for England to extend its means of education, in order that her people might rival their neighbours in commerce, industry, art, science, and literature.

In the year 1870, an Act, termed the Elementary Education Act, was introduced by the Right Hon. W. E. Forster, Vice-President of the Committee of Council on Education, under the premiership of the Right Hon. W. E. Gladstone, and passed. The object of this scheme is to provide means of instruction for all children who, through the poverty or the apathy of their parents, frequented the streets instead of school, or were sent out to work or beg while yet almost in their infancy. School Boards, consisting of members elected by the ratepayers, may be established where there are insufficient means of education, but the schools which previously existed are not to be interfered with. Children may still attend the voluntary schools, but if not attending any school they may be compelled by the School Board to receive instruction between the ages of five and thirteen years. Where there are not sufficient schools for all the children in the district, the Board may establish others, but only under these circumstances ; and even then, though they may compel every child to attend, the parent has the right to send his child to one of the previously existing establishments in preference to those instituted by the Board, if he wishes to do so. The changes brought about by this Act will prove very extensive, more especially in the metropolis, and all large towns of England and Wales. Its provisions do not apply to Scotland or Ireland.

E. H. B.

BRITAIN'S GREATNESS.

sta-tis'-tics, a collection of facts respecting the condition and resources of a nation	ap-pel-la'-tion (L. appello), name
ge-o-graph'-i-cal (Gr. ge, grapho), pertaining to geography	per-im'-e-ter (Gr. peri, metron), the boundary lines of a figure, circumference
in-sig-nif'-i-cant (L. in, significo), trivial, unimportant	lux'-u-ries (L. luxuria), dainties, delicious food or drink
in-clude' (L. in, claudio), to shut in, to contain	com-men'-su-rate (L. com, mensura), equal, proportionate
ev'-i-dence (L. video), proof or testimony	ac-cu'-mu-late (L. ad, cumulus), to heap up, to increase in size or number
lit'-er-al-ly (L. litera), according to the letter or exact words	bull'-ion, uncoined gold or silver
de-pend'-en-cy (L. de, pendeo), a territory remote from the country to which it is subject	spe'-cie, gold and silver coin
mar-i-time (L. mare), relating to the sea	dense'-ly (L. densus), thickly, compactly
	cheque, a written order on a banker directing him to pay a certain sum of money

THE island on which we live is called Great Britain, and we purpose in this lesson to bring forward certain statements and statistics to prove that no country in the world has a better right than our own to the distinctive appellation of 'Great.' Its greatness does not consist in its geographical extent, for there is scarcely a country of importance which does not far surpass it in size. It is certainly the largest island in Europe, and the seventh largest island in the world, and yet its size appears almost insignificant when compared with the countries of Asia and America, or with what are termed the 'Great Powers' of Europe. Even Italy is half as large again, and Spain is double its size. Norway and Sweden, Turkey, France, and Austria, are all considerably larger than Spain; whilst the new German Empire is about *four* times, and European Russia more than *twenty-four* times the size of Great Britain. We say *European* Russia because, if the Russian territories in Asia were included, we should

get a dominion more than eighty-eight times as large as our island.

The United States of America, which were first colonised by British subjects, and which, for a long time, formed a most important part of the British empire, now possess a territory about *thirty-eight* times larger than the mother country.

Yet, in spite of her small geographical extent, Great Britain has achieved for herself a greatness and a fame which have never been surpassed by any nation of either ancient or modern times. Not only has she successfully defended her shores against foreign foes, but her armies have been victorious in every quarter of the globe, and her matchless navy has made the English flag respected and feared on every sea. She exercises a very decided influence upon the policy of her neighbours, and has frequently been called upon to act as umpire in settling continental disputes. She has taken an active part in most of the great European wars, and some of the greatest victories recorded in history have been gained, against very great odds, by English armies and fleets. In proof of this assertion, we need only point to the signal victories of Crecy, Poitiers, Agincourt, Ramillies, Blenheim, Vittoria, Salamanca, and Waterloo on the land, and to La Hogue, St. Vincent, the Nile, Copenhagen, and Trafalgar on the sea.

There are few better evidences of our power, wealth, and greatness than our vast colonial empire, which excites both the admiration and envy of surrounding nations, none of whom can at all compete with us, either in the extent or importance of our foreign possessions. They are to be found in every part of the world; so that what was flatteringly said of the Spanish kingdom is literally true of the British empire—‘The sun never sets on the Queen’s dominions.’ This vast empire is more than twice as

large as the whole of Europe, and embraces about one-seventh of all the land on the surface of the globe. In America, the British territory covers four millions of square miles, or more than Russia, France, Spain, Portugal, and Italy put together! In Australia we have colonies nearly twenty times greater than England, Ireland, Scotland, and Wales. In Africa we have two colonies whose united area is greater than that of the British Isles by twenty thousand square miles. Our Indian possessions extend over nearly a million and a half of square miles, an area seven times greater than the whole of France. Besides these, we have islands in the West Indies, islands in the Mediterranean, and islands in the Pacific, Atlantic, and Indian Oceans. Many of our dependencies are so thickly populated that the subjects of Queen Victoria comprise nearly one-fourth of the entire human race. Our foreign possessions have been acquired in various ways: some have been discovered and colonised by enterprising British subjects, others have been won by the sword, and a few have been obtained by purchase or treaty.

The extensive commerce of Great Britain is another convincing proof of her greatness, for she is confessedly the first maritime nation in the world. The foreign trade of London alone is not only greater than that of any other *town*, but, with the exception of the United States and France, it exceeds that of any other *country*. The number of vessels engaged in the foreign, colonial, Irish, coasting, colliery, and fishing trades, which enter and leave the port of London *every day* is considerably more than two hundred, without reckoning steam-tugs and passenger steamers. The extent of our commerce can be best ascertained by consulting the official tables regularly published by the Board of Trade, which state the *quality* and *value* of such of our imports and exports

as pay duty to the State. The former consist chiefly of articles required for consumption, as food and raw materials for our manufactures.

As regards food, the tables just referred to show that, in one single year, we imported, in addition to 360,000 tons of flour and meal, 16,000,000 quarters of corn, which would suffice to make a wall thirteen inches thick, twenty feet high, and 1,460 miles long—being equal to the perimeter of a triangle having the Land's End, North Foreland, and Dunnet Head for its angular points. In the same year, we imported 200,000 tons of provisions, principally bacon and salted meat; besides receiving *every day* an average of upwards of a quarter of a million of eggs, and nearly twelve hundred live animals, including pigs, sheep, lambs, and horned cattle. During the year 1870 there were shipped from Victoria, in Australia, to this country, 6,500,000 lbs. of preserved meat, 834 cwts. of cured, 1,644 cwts. of salted beef, and about 15,000 lbs. of bacon and hams.

Four years previous, the total value of all the tinned meat imported from Australia was only 320*l.* In 1870 it was 204,000*l.*; whilst in 1871 it exceeded half a million sterling, and is still largely increasing.

Let us now turn from the *necessaries* of life, and look at the *luxuries* imported, which are a better indication of the wealth and prosperity of a nation.

Emerson, a well-known American writer, says of England:—‘It is too far north for the culture of the vine, but the wines of all countries are in its docks; and oranges and pineapples are as cheap in London as in the Mediterranean. There is no gold mine of any importance, but there is more gold in England than in all other countries.’

Another writer observes that, ‘if all the tobacco we imported in 1862 had been made into cigars, and packed in one-pound boxes, there would have been

boxes enough to build a wall, one box thick, 24 boxes, or 10 feet 3 inches high, and 215 miles long!' Our alcoholic beverages for one year, exclusive of cider, perry, home-brewed beer, British wines, and smuggled goods, would fill a canal 600 miles long, six feet wide, and three feet deep.

Our *exports*, which consist principally of manufactured goods, are on a scale commensurate with the *imports*. During the year 1871, there was sent forth from our shores the enormous length of 3,410,901,522 yards of cotton piece-goods, being at the rate of more than 9,000,000 yards a day, and sufficient to wrap round the earth at the equator more than seventy-seven times! If the money realised by an increase of a penny a yard in the price of this quantity of cotton cloth were invested at five per cent., it would yield a sufficient amount of interest to pay more than fifteen thousand labourers half a crown a day *constantly*.

The total value of the imports and exports of merchandise, exclusive of bullion and specie, into and from the United Kingdom for the year 1869 was 532,475,266*l.* Some idea of this amount of money may be obtained from the fact that it would take a man more than thirty-one years to count that number of sovereigns, at the rate of 100 a minute for nine hours every day, except Sundays.

We have no means of estimating accurately the extent of our home trade, but in a densely populated country possessing much accumulated capital, the internal trade may safely be presumed to be even greater than the foreign trade. The total amount of the cheques and bills which passed through the Bankers' Clearing House in London, during the year ending April 30, 1870, was 3,720,623,000*l.*, being at the enormous rate of nearly twelve million pounds a day.

G. H. G.

CAUSES OF BRITAIN'S GREATNESS.

na'-val (L. navis), <i>pertaining to ships</i>	sa-lu'-bri-ous (L. salus), <i>favourable to health</i>
mil'-i-tary (L. miles), <i>pertaining to soldiers</i>	hem'-i-sphere (Gr. hemi, sphaira), <i>one half of a sphere or globe</i>
man-u-fac'-tures (L. manus, facio), <i>things made by hand or machinery</i>	ter-res'-tri-al (L. terra), <i>relating to the earth, not celestial</i>
cre-di-bil'-i-ty (L. credo), <i>belief</i>	ho-ri'-zon (Gr. horos), <i>the place where earth and sky appear to meet</i>
ar-chi-pel'-a-go (Gr. archos, pelagos), <i>a sea containing many islands</i>	in-dom'-it-able (L. indomitus), <i>unconquerable</i>
mag'-ni-tude (L. magnus), <i>greatness</i>	stim'-u-lus (L.), <i>a goad, something that rouses up to greater exertion</i>
phys'-i-cal (Gr. phusis), <i>natural</i>	im-pede' (L. impedio), <i>to hinder or obstruct</i>
in'-su-lar (L. insula), <i>surrounded by water</i>	cor'-po-rate (L. corpus), <i>belonging to a corporation or public body</i>
trans'-it (L. transeo), <i>conveyance</i>	or'-i-gin (L. origo), <i>the first existence or beginning</i>
ac-cess'-i-ble (L. accedo), <i>approachable, able to be reached</i>	
ag-gres'-sion (L. aggredior), <i>attack, invasion</i>	

THE greatness of this country is not confined to the naval and military renown, the vast territorial possessions, and the extensive commerce mentioned in the preceding lesson; for Great Britain is pre-eminent likewise in wealth and manufactures. Its enormous wealth is a natural consequence of its great manufacturing and commercial superiority. The manufactures of the United Kingdom extend almost to every species of labour that renders the productions of nature fit for the uses and purposes of life, and are confessedly more numerous, more important, and more valuable than those of any other country. It is impossible to contemplate the progress of these manufactures during the last century without wonder and astonishment. The rapidity of the progress almost exceeds credibility.

Great Britain at the same time occupies a first rank among nations in literature, arts, religion, law,

and above all in the application of science to the industrial arts. Lord Macaulay asserts that 'the most splendid and the most durable of the glories of England is its *noble literature*,' which may be regarded as the inheritance of the seventy millions of people who, in different parts of the world, speak English as their native tongue.

We will now proceed to consider some of the circumstances which have enabled a nation, apparently destined to occupy only an archipelago in a corner of Europe, to arrive at the unparalleled magnitude, wealth, splendour, and position which we have indicated.

The causes of Britain's greatness are partly *physical* and partly *moral*; and first among the former we shall mention *its vast mineral wealth*, to which is due, in great measure its superiority in manufactures. Though destitute of the precious metals, England is richer in minerals than almost any other region of equal extent, particularly in those which are most useful to man, as coal, iron, copper, lead, tin, and salt. No fewer than between three and four hundred thousand persons are connected with the mines, of whom near a quarter of a million are employed in collieries; and the annual value of the minerals raised at the mouth of the mine—that is, previous to their being manufactured—is 30,000,000*l.*, that of coals alone being above 20,000,000*l.* The cost of an article depends mainly upon the expense of its production; and it is our coal and iron which have enabled us, by the application of steam power and machinery to manufacturing purposes, to reduce this expense sufficiently to enable us, in many things, to undersell other nations.

The second physical cause we shall notice is the *insular position* of Britain, which gives it a large extent of coast, well supplied with harbours and

roadsteads, and consequently many sea-ports. Our insular situation affords great scope for commercial enterprise, as it enables us to trade with the most distant as well as the nearest nations by the cheapest of all modes of transit. The island, too, is of such desirable dimensions that, while it is large enough to sustain several millions of people, no part of it is very distant from the sea, which greatly lessens the cost of the carriage of merchandise to and from the coast. Our harbours are never frozen, so that our ports are at all times readily accessible to ships; whilst our completely isolated position ensures comparative security against foreign aggression.

A third great natural advantage is our *salubrious and comparatively equable climate*, which is the result of our geographical position. Great Britain is situated near the middle of the north temperate zone, but, as Emerson observes, 'its climate is warmer by many degrees than it is entitled to by latitude. Neither hot nor cold, there is no hour in the whole year when one cannot work. The temperature makes no exhaustive demands on human strength, but allows the attainment of the largest stature.' The chief agent in moderating the natural climate of the British Isles is the Gulf Stream, which flows across the Atlantic towards the western shores of Europe; whilst the great Arctic Current carries its icy waters towards the coasts of North America. This is the principal reason why the fields of England are clothed in evergreen robes, and only a moderate degree of winter cold is experienced; while in Labrador, a maritime region in the same latitude on the opposite side of the Atlantic, the subsoil is permanently frozen, the winter cold is terrific, and for months the shores are encased with ice.

Another circumstance extremely favourable to the commercial prosperity of Britain is its advantageous

position with regard to other countries, being situated nearly in the *centre of the hemisphere of land*. If we take a terrestrial globe and adjust it to the horizon of London, we shall find that almost all the land on the earth's surface is *above* the horizon, whilst *below* it there is little else besides sea. So that were Britain to exchange positions with New Zealand, which is almost in the centre of the hemisphere of water, instead of having nearly all the inhabitants of the world surrounding her at moderate distances, her ships would have to sail thousands of miles before reaching her customers.

There can be no doubt that the incomparable superiority of Britain's *means of internal communication* have contributed very largely to her prosperity; but whilst her unobstructed rivers must certainly be classed amongst the physical *causes* of her greatness, her roads, canals, railroads, and telegraphs ought, perhaps, to be regarded rather as *consequences* of that greatness.

The great natural advantages already enumerated have doubtless been powerful auxiliaries in the prosperity of this country; but these causes are not in themselves sufficient to account for our high position as a nation. Much must be attributed to *moral* causes, amongst which we would mention first the indomitable courage, the daring enterprise, the skill, energy, and zeal which have always distinguished the Anglo-Saxon race, combined with the high character which British merchants have ever maintained for fair dealing, honour, and integrity. As a rule our traders have been so 'true and just in all their dealings' that our *public credit* is unbounded, and commands the confidence of merchants in every part of the habitable globe, thus proving a powerful stimulus to commercial enterprise.

Then, again, much of our manufacturing and

commercial prosperity may fairly be imputed to our free form of government and the wisdom of our national councils. Our laws are so wise and just, and are so faithfully administered, that life and property are felt to be secure. The manufacturer knows that the capital invested in his mill and machinery is as safe as if he had expended it in purchasing an estate.

‘While other countries on the Continent have had their industry clogged and their energies impeded by feudal and corporate privileges, every man in Great Britain is led to exert his energies in his own way, to adopt every fair device by which he can best attain his object, and to carry his labour and his produce to markets of his own choosing.’

We are also greatly indebted to our admirable *banking system*, which is a necessary auxiliary to the general circulation of money, and without which it would be morally impossible to carry on the trade and commerce of this country.

But we must not forget that the various advantages we have mentioned are but *secondary* causes after all, and would have been of no avail had not the great *First Cause* graciously watched over British interests, and abundantly blessed our highly favoured isle with His choicest gifts. Surely, when we contrast the humble origin of the British Empire with its present development, we are fully warranted in gratefully acknowledging ‘He hath not dealt so with any (other) nation.’

G. H. G.

ARTIFICIAL ILLUMINATION.

il-lu-mi-na'-tion (L. in, lumen), <i>the act of supplying with light</i>	de-te'-ri-or-ate, <i>to grow worse</i>
sus-pend'-ed (L. sub, pendo), <i>interrupted</i>	at'-mos-phere (Gr. atmos, sphai- ra), <i>the envelope of air which surrounds our earth</i>
phos'-pho-rus (Gr. phos, phoros), <i>a highly inflammable substance (obtained from bones), which is luminous in the dark</i>	hy'-dro-gen (Gr. hudor, gennao), <i>a gas possessing neither colour, taste, nor smell, the lightest body known</i>
ad-hër'-ing (L. ad, hæres), <i>stick- ing to</i>	vi'-tal (L. vita), <i>necessary to life</i>
pneu-mat'-ics (Gr. pneuma), <i>the science which treats of the me- chanical properties of the air and other gases</i>	in-can-des'-cent (L. in, candeo), <i>glowing with white heat</i>
re'-ci-pe (s) (L. re, capio), <i>a pre- scription</i>	fu'-si-ble (L. fundo), <i>capable of being melted</i>
a-mor'-phous (Gr. a, morphe), <i>without form or regular shape</i>	com-bus'-tion (L. con, uro), <i>a chemical process by which both light and heat are emitted, burning</i>
de-le-te'-ri-ous (L. deleo), <i>deadly, destructive</i>	fo'-ci (L.), <i>the plural of focus, the point at which rays are collected by a lens or mirror</i>
in-cred'-i-ble (L. in, credo), <i>not to be believed</i>	con'-cen-tra-ted (L. con, centrum), <i>brought to a common centre</i>

FEW persons pause to consider how deeply we are indebted, particularly in our northern latitude, to the means invented by man for illuminating and cheering the hours of darkness. The sun is, of course, the great *natural* source of light, as well as of heat; but his beams are absent for so large a proportion of our short lives, that, if all means of artificial illumination were taken away from us, both rich and poor would suffer great inconvenience and loss. All kinds of labour would have to be suspended at sunset, much valuable time would be lost, the safety of the community would be endangered, and the wealth and commerce of nations crippled in many ways.

Lucifer matches have so completely superseded all other methods of obtaining a light, that the 'tinder-box,' with its flint and steel, so familiar to our grandfathers, is almost unknown to the younger

members of the present generation. The tinder-box was made of metal; the 'steel' was a piece of hard iron, curved round at the top and bottom so as to form a handle; and the flint consisted of a fragment which had been thrown aside by the maker of gun-flints for the army, before the days of percussion caps. The tinder was made by burning a piece of linen or cotton rag in the tinder-box, until it was converted into vegetable carbon. The matches consisted of pieces of paper, or thin splints of soft wood tipped with sulphur. To obtain a light, the sharp edge of the flint was struck smartly against the steel, chipping off small heated fragments in the shape of sparks, which fell upon and ignited the tinder. Sometimes the matches or tinder would be damp; the flint became blunt, and the steel worn; and frequently, on a cold, dark morning, the operator would strike his knuckles instead of the steel; and both eyes and lungs were inconvenienced by the suffocating fumes raised by blowing upon the tinder, to raise the heat sufficiently to kindle the match.

About the year 1673, the chemists discovered *phosphorus*, a substance which can be easily ignited by mere friction, and which is, therefore, very suitable for match-making. But it was a long time before any expedient was adopted whereby phosphorus could be safely used for this purpose. 'Phosphoric tapers' were tried for some time, but they proved very troublesome and expensive. They consisted of small wax tapers, whose wicks were coated slightly with phosphorus, and the whole was inclosed in a glass tube. When a light was required, one end of the tube was cut off with a file, and the taper took fire on exposure to the air. The next invention was the 'Phosphorus bottle,' which consisted of a small, well-corked phial, containing a piece of partially burnt phosphorus. When a light was wanted,

a common sulphur match was thrust into the bottle, and a small portion of the phosphorus adhering to the tip, a flame was produced.

Electricity next supplied a means of procuring an instantaneous light, but the apparatus was so complicated, cumbersome, and costly, that it never became popular. Pneumatics was then tried. A piece of amadou, or German tinder, was placed at the closed end of a brass syringe or squirt, and, when the piston or rammer was forced down, the air was so heated by compression that it ignited the tinder.

But, after all, the match-maker had to depend on the chemist, who informed him that a splint of wood tipped with a paste consisting of potassic chlorate, sugar and gum, would burst into flame when brought into contact with sulphuric acid. A step further in the way of improvement enabled the match-maker to dispense with tubes, acids, pistons, and everything else of a complicated nature; and a match was invented which ignited by mere *friction*. This was the beginning of the triumphant reign of the 'Lucifer-match.' Different manufacturers use different recipes for tipping their matches; but the substances most extensively employed for this purpose are phosphorus, chlorate of potash, sulphide of antimony, saltpetre, starch, gum, and glue, coloured with red ochre, red lead, smalt, vermilion, or Prussian blue. The splints for the 'safety matches,' which ignite only on the box, are dipped in melted paraffine, and afterwards in a composition of potassic chlorate and manganic oxide, made into a stiff paste with glue. There is no phosphorus on the matches, but the composition on the box is made with *amorphous* phosphorus and fine emery powder mixed with glue. The ordinary waxy-looking phosphorus emits very deleterious fumes, which gradually eat away the jaw-bones of persons exposed to them, so that match-

making was a most unhealthy employment until Schonbein, a celebrated chemist, discovered a method whereby phosphorus could be rendered harmless without losing its most valuable properties. Ordinary phosphorus is heated, in the absence of air, until it becomes a red powder, known as *amorphous* phosphorus, which has no injurious effect upon the poor match-maker.

One or two facts must suffice to indicate the almost incredible extent to which this apparently trifling manufacture has grown. At one of the large establishments in London there is an ingeniously-constructed machine which cuts up blocks of the best yellow pine into splints for matches, at the astounding rate of *sixty thousand a minute*. A German manufacturer advertises fifteen thousand untipped splints for a penny, and one hundred empty match-boxes for twopence! A single firm in Lancashire 'employs four hundred hands, keeps 10,000*l.* worth of timber always on hand, uses every week a ton of sulphur and a ton of glue, and produces weekly more than forty million matches—enough to engirdle the earth and leave a few to spare.'

Our limited space prevents us from attempting anything like a history of domestic illumination, and we must content ourselves with remarking that the clumsy contrivances of former ages have given way to lamps which testify to the improved skill, taste, and science of the present day. Our streets, shops, and private dwellings are lighted with coal-gas, which is a very cheap, manageable, and beautiful source of light; but it is open to many objections. In the first place, it quickly deteriorates the atmosphere of rooms in which it is burnt, for the hydrogen it contains not only consumes a large amount of the vital oxygen, but it at the same time sets free about *four* times the quantity of nitrogen, which is a

poisonous gas. Further, the carbon of the gas combines with another portion of the oxygen, and forms a still more deadly poison, known as carbonic acid. The surrounding air is also inconveniently heated, so that it is not surprising that in crowded and badly-ventilated rooms, persons are afflicted with headache, palpitation, fainting, and other distressing symptoms. We cannot, therefore, consider coal-gas a perfect source of light, and it is not improbable that we may live to see it superseded either by the 'Lime-light' or the 'Electric-light.'

The 'Lime-light' was invented by Lieutenant Drummond, who used it in conducting the Ordnance Survey in Ireland and Scotland in 1826. Its intensity was so great that it was seen at a distance of ninety-five miles, and it is so white that the most delicate shades of colour can be distinguished by it as correctly as by daylight. It is also free from the objections urged against gas; for it does not heat the surrounding air, neither does it deprive it of any oxygen; and, as it has no carbon in its composition, it cannot form carbonic acid. Neither wind nor rain can extinguish the lime-light, which is able to penetrate fog to some hundred yards, on occasions when other lights are quite useless.

The great rival of the lime-light is the *electric-light*, which was discovered and described by Sir Humphry Davy in 1813. It is produced by the current of a powerful galvanic battery passing between two pencils of very hard carbon or charcoal, such as that deposited inside the retorts of gas-works. The carbon, being an imperfect conductor of electricity, soon becomes highly *incandescent*, and as it is not fusible, the splendour of the light is only limited by the power of the battery. As in the case of the lime-light, the electric-light is not the result of *combustion*, but of *incandescence*; it can therefore be produced in a

vacuum or below the surface of water. It is the most brilliant of artificial lights, and yet none of the attempts to substitute it for coal-gas in lighting the public streets have proved successful. The chief obstacles are the difficulty of maintaining a *steady, continuous* light, and the great *expense* incurred by the necessity of always having an attendant to regulate its action. It has, however, been used with excellent effect, both in England and France, for giving light to workmen who are obliged to continue operations during the night, for lighthouse purposes, and for illuminating cities and buildings on occasions of great rejoicings.

In no instance have the improvements in artificial lighting been more apparent or valuable than in the illumination of lighthouses. Formerly, the only means of warning the sailor against dangerous coasts was to keep burning a number of dull oil-lamps, or to kindle a huge bonfire, which was pretty sure to be extinguished by the rain on stormy nights when it was most needed. Now, the lime-light, the electric-light, and other intensely brilliant lamps are used, and are placed in the foci of reflectors so constructed that every ray of light is concentrated and utilised. By this application of chemical and optical principles, a vast amount of life and property is annually saved from destruction.

England enjoys the honour of being the first nation to employ coal-gas for purposes of illumination, and London was the first city lighted with gas. The first public display of this light was made by Mr. Murdoch in the illumination of Messrs. Watt and Boulton's manufactory, at Soho, in Birmingham, at the peace rejoicings of 1802. Six years later, all the principal shops and mills in Soho were lighted with gas; and the example was soon followed by other towns in England and on the Continent.

Improvements, almost equally great, have been effected in the methods of warming and ventilating our apartments. The plan now usually adopted of heating large public buildings by means of pipes containing steam, hot air, or hot water, is found to be more effectual, more healthy, and less expensive than the old stoves, huge fire-grates, or open braziers.

An important means of procuring a powerful heating and illuminating gas, recently discovered, bids fair to be of the greatest utility. By this plan a jet of steam is passed through a furnace or furnaces kept at a very high temperature. The heat decomposes the steam into its constituent gases, oxygen and hydrogen. The former of these is lost, but the latter is available for heating purposes, yielding, as it does, very intense heat, but giving little or no light. When required for illuminating purposes it is passed through petroleum at a rather high temperature, and, taking up with it the gas given off by the oil, becomes as good an illuminator as that obtained from coal.

The company which has been formed to work the patent says it can supply, for one shilling and eightpence per thousand cubic feet, as good a gas as that obtained from coal, for which we are paying from three shillings and sixpence to four shillings per thousand feet.

G. H. G.

HISTORIES IN WORDS.

It is extremely interesting to study the words of which the English language is composed; whence they come; what they meant originally; what they mean now; how they came to be applied to the things they represent, and other particulars respecting them.

Some have interesting histories of their own. The word *oscillate*, which you know means to move backwards and forwards like the pendulum of a clock, is derived from the Latin word *oscillum*, a little face. You wonder, I daresay, what the connection can be between the two? Well, the old Romans used to hang up on their vines and other trees little images of the face of their god Bacchus, who was supposed to be fond of wine and to favour the growth of the vine. This little face, made of plaster or stone and called *oscillum*, used of course to be blown backwards and forwards by the wind, and the word *oscillate* was used to express this motion.

Some of you have probably seen royal processions, in which the Queen was attended by smart-looking men, dressed most gorgeously in the royal colours, with ruffs round their necks and velvet caps, and you have been told that these men were *Beef-eaters*. Perhaps you thought they lived entirely on the roast beef for which England is said to be famous, or that they were especially fond of it. Well, perhaps they are, and we will not blame them for their partiality. Their name, however, is not derived from this circumstance, but because their duty was formerly to stand at the side-board or *buffet* during royal feasts. Hence they were called in French, which was the court language of the day, *buffetiers*, and this word in time became corrupted into *Beef-eaters*.

The word *tawdry*, which you know is applied to shabby finery, is said to be derived from St. Awdrey, whose statues in old times were always dressed in resplendent garments.

Many articles in daily use obtained their names from their inventors or discoverers, whose memory has thus been perpetuated from generation to generation in a way, perhaps, they themselves would not have dreamed of. Thus, *Congreves*, or lucifer

matches, are so called from a Mr. Congreve who invented them. *Hansom* cabs are so called from their inventor. *Shillebeer*, a kind of hearse comprising also a compartment serving as a carriage for the mourners, is also thus derived. *Daguerreotype* and *Talbotype*, which were among the earliest, if not the earliest, kinds of sun-pictures, and which preceded photography, were so called from their inventors, Daguerre and Talbot. So *Galvanism*, a kind of electricity, was named after Galvani, an Italian philosopher, who first discovered it. *Mackintosh*, which you know is a kind of waterproof cloth prepared with india-rubber, derives its name from its inventor.

Many names of articles are derived from those of the places where they were first made. Thus, *Calico* from Calicut, in India; *Worsted*, from a place of that name in Norfolk; *Damask*, from Damascus, in Syria; *Nankin*, from a city of the same name in China. Of course these articles are manufactured in much larger quantities in other places now; as, for instance, calico, which is chiefly made in Manchester and other towns in Lancashire. The kind of carpet known as *Kidderminster*, or more shortly *Kidder*, and that known as *Brussels*, are manufactured, for the most part, at Halifax in Yorkshire, in which county also a large portion of the cloth known as 'West of England' is made.

Names of articles are in some cases derived from those of nations, as *cravat*, which is a kind of neck-cloth, is said to be derived from Crabat or Croat, an inhabitant of Croatia in Austria. *Magenta*, the name of a colour discovered a few years since, is derived from Magenta, where Napoleon III. defeated the Austrians in 1859. Some words in very common use are abbreviations of longer ones. Thus, *cab* is an abbreviation of the French *cabriolet*, and *bus* of the Latin *omnibus*, which means *for all*; *mob*, a

crowd of persons easily moved to good or evil, from the Latin *mobilis*, moveable.

Some names which were at first given in derision, have in the course of time lost their derisive force, and in some cases have been adopted, and are constantly used by the class of persons to whom they were originally applied by their enemies. This is the case with the words *Christian*, given to the followers of Jesus Christ, and *Methodist*, given to the followers of John Wesley.

Many places in America are named after others of historical, commercial, or other interest in the Old World. Thus we find *Philadelphia*, *Athens*, and *Corinth*, from cities in Greece. *Boston*, *New York*, and *London*, from cities in England. Some derive their names from their original founders or other distinguished persons, as *Washington*, *Pittsburg*, and *Calhoun*. The name *Pennsylvania* is derived from William Penn, the Quaker, and *Sylvania*, which means a country covered with forests. *Carolina* was so named in honour of Charles II.; and *Virginia*, in honour of the virgin Queen Elizabeth. *Oregon*, a territory in the Far West, appears to have been given by the pioneers who first settled it from the Greek word *orego* (*ὀρέγω*), to stretch out.

Now and then we come across words which have acquired a sort of derisive or contemptuous force, which they did not formerly possess. Thus *villein*, which was originally merely a peasant, under its modern form of *villain*, means a person of violent and abandoned character; *knave* was originally only a servant; *boor*, a farmer; *pagan*, a villager; but as the inhabitants of country villages were the last to throw off heathenism, the name *pagani* came to mean the same as heathen. Among words which have changed their meaning entirely, we must not omit *let*, which formerly meant to hinder, but now means to permit.

In Exodus v. 4, Pharaoh is represented as saying, 'Wherefore do ye, Moses and Aaron, *let* the people from their works?' So the word *prevent* originally meant to go before to help. Hence we have in one of the Church of England Collects, '*Prevent* us, O Lord, in all our doings with thy most gracious favour;' now, we know, it means quite the opposite of this. The word *tale* formerly meant merely the number of things which were counted. Thus, in the same chapter of Exodus which I mentioned above, we read of 'the *tale* of the bricks.' And in Milton's poem 'L'Allegro'—

Every shepherd tells his tale
(i.e. *counts his sheep*),
Under the hawthorn in the dale.

So the word *carriage* has changed its meaning. In 1 Samuel xvii. 22, we read that David left his *carriage*, i.e. the things he was *carrying*, as a present to his brethren, 'in the hand of the keeper of the carriage.'

Some flowers have names descriptive of their appearance or shape, as *calceolaria*, which means a little slipper; *auricula*, a little ear; *heartsease*, because it is shaped something like a heart; *aster*, from *astron*, a star.

There is a curious class of words in common use, which, being entirely classical, probably had their origin among the young men of our universities. Thus *tandem*, is a Latin adverb, meaning at length; and 'driving *tandem*' is driving two horses at length, i.e. one in front of the other. So *nous*, which means sharpness of intellect, is the pure Greek word (*νοῦς*) for the mind. So 'skedaddle' is said to be derived from a Greek word *skedannumi* (*σκεδάαννμι*), to scatter; and *dicky*, a separate shirt-front, from another Greek word (*διχῆ*) meaning asunder, apart.

E. T. S.

USEFUL RULES FOR HEALTH.

1. Either at night, or in the morning on rising, wash over the body with soap and flannel, and rub dry with a very rough towel.

2. Eat food slowly, and chew it well; and sit a little while after eating. Never drink very hot liquids.

3. On going to bed, hang your clothes on chairs or hooks, especially those worn next to the skin.

4. The clothes not in use air as much as convenient.

5. In one way or another always obtain *fresh* air in your bedroom at night. Either leave the window open an inch, or bore four or five large holes in the top of the window frame and the bottom of the door, so that you can secure the change of air necessary to health.

6. Walk at least five minutes in the open air before breakfast; longer if you can.

7. Before you leave your bedroom, throw open every door and window, and place each article of bed clothing on separate chairs, or even on the floor, to allow them to become pure after the night's exhalations.

8. Three meals each day are sufficient for health. Some people are better with only *two good* meals.

9. Take every opportunity of outdoor exercise of any kind.

10. Cold sponging, in addition to the washing of the body, strengthens, and prevents catching cold.

11. The hair should be kept free from dust by brushing and occasional washing, and the pores of the skin of the head unclogged by thick heavy grease. A little oil is sufficient.

12. Cold feet in bed can be avoided in two ways: by a smart walk just to give circulation to the blood; or by immersing in tolerably hot water till warm, and, when wiped, putting on an old pair of socks.

13. It is an excellent rule to breakfast off Scotch porridge one morning, and bread and milk the next. The porridge is made from *coarse* Scotch oatmeal boiled for a long time. This last food is a good remedy for constipation; as is also drinking a glass of cold water every morning on rising.

14. It is conducive to indigestion to eat anything hot or heavy, such as meat or pastry, or rich food of every kind, after

six o'clock. If from any cause the last meal has been deferred later, it is better to eat than go to bed after a long fast.

15. If troubled with indigestion after all this care, drink one or two tumblers of water as hot as can be borne. This will remove flatulency and prevent pain. Never use carbonate of soda, as it may injure the coats of the stomach.

16. If unable to get to sleep, rise and sponge the whole body with tepid water, and rub dry; and the next day take care to get as much open air exercise as possible. Never indulge in exciting reading just before retiring to rest.

17. Be careful always to find out the cause of any close or unpleasant smell. Sometimes a very small piece of food or fruit or dirty cloth will putrefy and infect the air of a house for weeks without being discovered. Dust alone, left to accumulate, will render a room unfit to live in.

18. See that the drains are often flushed with as much water as can be spared; as typhoid and other fevers are often caused by neglect in this matter. Occasionally use some disinfecting fluid or powder. Any chemist will advise which to use. Never allow boxes or rubbish or carpets to remain under the bed, or neglect wiping up the dust which accumulates there. See that bedrooms are kept as pure as possible, as during the time spent in sleep it is as important to breathe pure air as during the daytime.

19. If unable to wash all over—do what you can as quickly as possible, and with spirit, rubbing till a glow is produced over the body. Always wash face, neck, arms, and hands, and sponge the chest and throat and back. Use soft tooth brushes; hard ones cause the gums to become sore, and produce premature decay. Always use soft water in preference to hard.

USEFUL REMEDIES.

Open Sores.—Till the doctor comes, cleanse the place well with warm water, then take a piece of soft linen, folded twice or three times, squeezed out of warm water, and lay on the sore, covering with fine flannel to keep the moisture in. If the sore is in the leg, perhaps it may arise from pressure on the veins; this should be remedied by a long flannel bandage round the leg, from the toes to the knees, in order to strengthen the vessels.

Falls and Bruises.—Sponge the injured member, whether sprained or bruised, with water as hot as is bearable for a long

time, if possible till the pain and swelling be gone; then lay on a cool (i.e. not quite cold) linen rag folded several times, and squeezed nearly dry, and change as often as it gets hot. This draws away the heat, and renders inflammation less likely. Keep the patient quiet.

Boils and Carbuncles.—One remedy is, a plaster of soft soap on a piece of linen, with a hole out in the middle to allow the matter to escape; but an excellent plaster is made from the ointment, page 240. This has never failed. If the boil or carbuncle is very severe, an alternate linseed poultice, with a small piece of the ointment, put on very hot, will help suppuration, so will sponging with very hot water, which will soften the skin, and cause it to break. After it has broken, as often as the ointment is changed, *cleanse* the wound with soft linen rag and *warm* water, removing gently any matter, if able to do so without pain. After a while, if at all inflammatory, try a soft pad of linen rag, wrung out of *tepid* water, and covered with oiled silk. This soothes, heals, and cleanses, and will generally wind up the whole affair pleasantly.

Burns and Scalds.—At once mix *common whitening* with oil or water into a smooth paste like thick cream. Softly lay this on with a brush or feather, about as thick as the eighth of an inch, taking care not to break the blisters. Cover this with flannel to keep in moisture, and also moisten from time to time the whitening with oil or water. If whitening is not handy, use flour; if neither can be had, dip pieces of rag in sweet oil, and lay on the burns, covering the rags with cotton wool to keep out the air.

Chilblains.—Wear worsted, not cotton, socks or stockings; two or three times during the day put the foot affected into water comfortably hot for several minutes, and then rub dry. If this does not cure very quickly, a few drops of tincture of arnica in the water will.

Cold.—If exposed to wet or sharp winds, on returning home, change damp clothes, especially boots and stockings, and immerse the feet in hot water for some time, and rub them dry. If possible, get to a warm bed, after taking a teaspoonful of spirits of nitre in a cup of hot milk; or a Dover's powder in a little preserve; or take two or three drops of spirits of camphor on a piece of lump sugar.

Cold on the Chest.—Dip a flannel in boiling water, sprinkle it with turpentine, and lay it on the chest at once. This will generally relieve a severe cold or hoarseness immediately.

Corns.—Never wear tight shoes—pressure is almost always the cause of corns. If they do come and are painful, make a pad of soft linen rag dipped in cold water, or a small poultice,

and lay it on them during the night; next day cover with pure lard or glycerine. Pick off the head of the corn with the nail.

Whooping Cough.—One pennyworth of cochineal, one pennyworth of salt of tartar, one pennyworth of ipecacuanha, dissolved in half a pint of warm water, and sweetened with lump sugar, form an agreeable and useful remedy. A teaspoonful should be taken about three times daily.

USEFUL RECIPES.

Cure for the Sting of Wasps or Bees.—Bruise a leaf of the poppy, and apply it to the part affected. Immediate relief will be experienced.

How to make Tea.—Pour into the teapot about half a pint of *boiling* water. After a couple of minutes, pour this away, and then put the tea in at once. Close the lid, in order that the steam may penetrate the leaves. At the end of two minutes add about half a pint of *boiling* water, and when this has stood for about three minutes, fill up the teapot. It will then be ready to be poured out.

To make a Treacle Pudding.— $\frac{1}{2}$ lb. of suet finely chopped, $1\frac{1}{2}$ lb. of flour; a little lemon peel, or any spice; and about $\frac{1}{2}$ lb. of treacle. Mix these well together, and put them into a basin, tying a cloth over the basin thus filled. Boil for two hours.

A Cheap Dinner.—Boil a quantity of potatoes, previously peeled, with a little salt. When done, pour off three parts of the water. Fry some pieces of fat bacon, cut into dice, with some onions. When these are cooked, add about a tablespoonful of flour, and two or three tablespoonfuls of vinegar. Add these to the potatoes, stir all together, and serve.

A Nourishing Soup.—3 lbs. of ox-cheek, $\frac{1}{2}$ lb. of cow-heel; two pennyworth of onions; two pennyworth of mixed vegetables; two gallons of water; two teaspoonfuls of salt; one teaspoonful of pepper. Put a little dripping into a frying-pan; place it on the fire, and make the dripping hot; then fry the meat a light brown, first cutting it into pieces of a moderate size; cut up the onions and fry them. Put the meat and onions into a pot with the water, and let it boil up; then add the mixed vegetables, cut up into pieces, and let the whole simmer for six hours. Thicken with about $\frac{1}{2}$ lb. of flour.

A Good Plum Pudding.—1 lb. of flour; $\frac{3}{4}$ lb. of suet; 1 lb. of raisins; $\frac{1}{2}$ pint of milk or water. Cut the raisins in halves; well mix all together and boil for $4\frac{1}{2}$ hours.

A Relishing and Cheap Dinner.— $\frac{1}{4}$ lb. suet or dripping; $\frac{3}{4}$ lb. of flour; a little salt; make into a crust, and line a basin with it. Obtain $\frac{1}{4}$ lb. of streaky bacon, and cut it into dice; chop up six good-sized onions; take four leaves of sage rubbed fine; half a teaspoonful of pepper. Mix all together, and put into the basin. Tie the pudding in a well-floured cloth, and boil four or five hours.

A Cheap Soup.—Take a pound of bacon or pork, cut it into small pieces, a quarter of a peck of potatoes peeled and cut up, two or three turnips, as many onions as you like, peeled and sliced up, some pepper and salt, a gallon of water (cold), and stew the whole over a slow fire for five hours, taking care to keep the pot well covered.

A Good Hot Dinner and Supper.—Some scraps of meat put into four pints of cold water; two onions, some salt and pepper, and a quarter of a pound of rice. Let it boil gently for five or six hours the day before it is wanted. It will keep for three or four days, and may be warmed up as it may be required.

Mutton Broth.—Put a pound of neck of mutton into a quart of cold water, two turnips, and an onion peeled and sliced, and a little salt. When it boils, skim it, and then set it over the fire till the mutton is quite in rags; but do not let it boil again, or it will waste.

A Refreshing Drink for a Sick Person.—Peel two slices of lemon, and put them into a teapot with a little bit of the peel, and a small quantity of moist sugar. Pour in boiling water, and cover it for two hours before it is used.

Another.—A large spoonful of black currant jam, put into a tumbler of hot water: let it stand for a few minutes.

Barley Water.—Wash a handful of common barley; then simmer it gently in three pints of water, with a bit of lemon peel.

Gruel.—Put two tablespoonfuls of groats into half a pint of cold water, set it on the fire, and stir it often, till it is as thick as you wish it to be; strain off the groats, and let the gruel be eaten while it is warm. Add either sugar or salt.

An Ointment for Boils, Carbuncles, and Wounds of all Kinds.—6 oz. diachylon of the gums; $\frac{1}{4}$ lb. of best yellow bees' wax; $\frac{1}{4}$ pint of salad oil; two large spoonfuls of honey. Melt these slowly together, stirring until thoroughly mixed. When cold, it is ready for use, and should be spread rather thick on thin wash-leather, or cloth, and applied to the part, a fresh plaster being supplied once in every twenty-four hours.

LIST OF ROOTS.

In the following List, all the words derived from other languages than the Latin have letters placed after them, indicating the language whence they are derived ; as, Gr. signifying 'Greek,' Fr. 'French,' S. 'Saxon,' D. 'Danish,' W. 'Welsh,' Sp. 'Spanish,' Ar. 'Arabic.'

<i>à</i> (Fr.), to, adieu	<i>carus</i> , dear, <i>caress</i>
<i>ad</i> , to, <i>adapt</i>	<i>cavus</i> , hollow, <i>cave</i>
<i>ago</i> , <i>actum</i> , to do, to act, <i>agent</i>	<i>cedo</i> , <i>cessum</i> , to yield, to go, <i>cede</i>
<i>alter</i> , another, <i>alter</i> , <i>alteration</i>	<i>accede</i> , access, <i>abscess</i>
<i>amphi</i> (Gr. ἀμφί), on both sides,	<i>certus</i> , certain, <i>ascertain</i>
both, <i>amphibious</i>	<i>chasser</i> (Fr.), to chase, <i>purchase</i>
<i>ana</i> (Gr. ἀνά) through, up, <i>anatomy</i>	<i>character</i> (Gr. χαρακτήρ), a mark,
<i>angulus</i> , a corner, <i>angle</i>	likeness, <i>character</i>
<i>anima</i> , air, breath, life, <i>animate</i>	<i>circus</i> , a circle, <i>encircle</i>
<i>animus</i> , the mind, <i>magnanimity</i>	<i>civis</i> , a citizen, <i>civil</i>
<i>annus</i> , a year, <i>annual</i>	<i>clamo</i> , <i>clamatum</i> , to cry out,
<i>aperio</i> , <i>apertum</i> , to open, <i>aperient</i> ,	<i>clamour</i> , <i>acclaim</i>
<i>aperture</i>	<i>clarus</i> , clear, <i>clarify</i>
<i>apparatus</i> , equipage	<i>claudo</i> , <i>clausum</i> , to shut, <i>clause</i> , in-
<i>apto</i> , <i>aptum</i> , to fit, <i>apti</i> , <i>adapt</i>	<i>clude</i>
<i>agua</i> , water, <i>aqueous</i>	<i>clino</i> , to bend, <i>incline</i> , <i>decline</i>
<i>ars</i> , <i>artis</i> , art, <i>artificial</i>	<i>coquo</i> , <i>coctum</i> , to boil, to cook, <i>de-</i>
<i>asparagus</i> , a plant	<i>coction</i> , <i>biscuit</i>
<i>attacher</i> (Fr.), to tie, to fasten, <i>attach</i>	<i>con</i> , together with, <i>connect</i> , <i>combine</i>
<i>atmos</i> (Gr. ἀτμός), vapour	<i>considero</i> , <i>consideratum</i> , to con-
<i>aulos</i> (Gr. αὔλος), a pipe, <i>hydraulics</i>	<i>sider</i> , <i>consideration</i>
<i>barilla</i> (Sp.), a plant	<i>cor</i> , <i>cordis</i> , the heart, <i>cordial</i>
<i>beau</i> (Fr.), fine, <i>beauty</i>	<i>credo</i> , to believe, <i>credible</i>
<i>bene</i> , well, <i>benediction</i>	<i>creasco</i> , <i>cretum</i> , to grow, increase
<i>bibo</i> , <i>bibitum</i> , to drink, <i>bib</i> , imbibe	<i>colo</i> , <i>cultum</i> , to cultivate, <i>culture</i>
<i>binus</i> , two and two, double, <i>binary</i>	<i>cumulus</i> , a heap, <i>accumulate</i>
<i>bis</i> , twice, <i>biennial</i> , <i>bisect</i>	<i>cura</i> , care, <i>cure</i> , <i>curate</i>
<i>bonus</i> , good, <i>bonny</i> , <i>bounty</i>	<i>curiosus</i> , <i>curious</i> , <i>curiosity</i>
<i>boase</i> (Fr.), a relief, a lump, <i>emboase</i>	<i>curro</i> , <i>cursum</i> , to run, <i>current</i>
<i>bout</i> (Fr.), the end, <i>extremity</i> , <i>abut</i>	<i>de</i> , down, <i>deject</i> , <i>decline</i>
<i>brunir</i> (Fr.), to burnish	<i>deleo</i> , <i>deletum</i> , to blot out, <i>indelible</i>
<i>cædo</i> , <i>cæsum</i> , to cut, to kill, <i>decide</i> ,	<i>deliciae</i> , pleasures, <i>delicacy</i>
<i>homicide</i>	<i>demos</i> (Gr. δῆμος), the people,
<i>calamitas</i> , a calamity, <i>calamitous</i>	<i>demagogue</i>
<i>canis</i> , a dog, <i>canine</i>	<i>densus</i> , thick, close, <i>density</i>
<i>capio</i> , <i>captum</i> , to take, <i>capable</i> ,	<i>détacher</i> (Fr.), to detach
<i>capture</i>	<i>développeur</i> (Fr.), to <i>develope</i>

dexter, right-handed, *dexterity*
dico, dictum, to say, *diction*, *dictate*
difficilis, difficult, *difficulty*
dis, asunder, *dissociate*
divido, *divisum*, to divide, *division*
do, datum, to give, date
dominus, a master, a lord, *dominate*
domus, a house, *domestic*
duco, ductum, to lead, induce *induct*
duro, duratum, to harden, *indurate*
ek (Gr. ἐκ), out of, from, *eccentric*
elao (Gr. ἔλαω), to drive, *elastic*
en (Fr.), in, into, *enchase*
epi (Gr. ἐπὶ), upon, *epitaph*
esse, to be, *essence*
ex, out, *expel*
examen, a trial, *examine*
experior, *expertum*, to try, *ex-
 perience*, *expert*
exter, outward, *exterior*
extra, beyond, *extraordinary*
faber, a workman, *fabrio*
facies, a countenance, *facial*
facilis, easy, *facility*
facio, factum, to do, to make, ef-
 face, deface, *fact*
fama, fame, *defame*
familia, a family, *familiar*
faveo, to favour, *favourable*
felt (S.), felt
fero, to bear, to carry, *confer*
ferox, fierce, *ferocious*
finis, the end, *finish*
finio, finitum, to finish, *infinite*
flamma, a flame, *inflamm*, *inflam-
 mation*, *inflammatory*
flecto, flexum, to bend, *reflect*, *reflex*
fluo, to flow, *fluent*
focus, a hearth, a fire, *focus*
fortis, strong, *fort*
fortuna, fortune, *fortunate*
frango, fractum, to break, *fraction*
frequens, frequent
frustra, in vain, *frustrate*
fundo, fusum, to pour out, to melt,
 found, profuse
genus, a kind, a race, *general*
gero, gestum, to bear, to carry on,
 digest

glupho (γλύφω), to carve, *hieroglyphic*
gorge (Fr.), the throat, *gorge*
gradior, *gressus*, to step, *gradient*,
progress
gradus, a step, *grade*
gré (Fr.), will, accord, *agrees*
grex, *gregis*, a flock, *gregarious*
habeo, *habitus*, to have, *habit*
hæreo, *hæsum*, to stick, *adhere*
hap (W.), luck, chance, *mis hap*
haurio, *haustum*, to draw, *exhaust*
hieros (Gr. ἱερός), holy, *hierarch*
hodos (Gr. ὁδός), a way, *exodus*,
homo, a man, *homicide*
hutor (ὕδωρ), water, *hydraulics*
ignoro, I do not know, *ignorant*
in, in, into, induce
industria, *industry*
ingenium, natural disposition, wit,
ingenuity
injuria, wrong, *injury*
integer, entire, *integral*
inter, between, *interpose*
intro, within, *introduce*
invito, to invite, *invitation*
kmiva (Ar.), the occult art, al-
 chymy
krustallos (Gr. κρύσταλλος), *crystal*
labor, lapsus, I slide, I fall, *lapse*
lego, lectum, to gather, to choose, to
 read, *legible*, collect, *college*
long (S.), length, *linger*
ligo, ligatum, to bind, *ligament*,
ligature
linguo, lictum, to leave, *relinquish*
logos (Gr. λόγος), a word, a dis-
 course, *logic*
lumen, light, *luminary*
luo (Gr. λύω), to loose, *analyse*
lustro, lustratum, to purify, to en-
 lighten, *illustrate*
luxus, excess, *luxuriant*
lymph, a stream, *lymph*
mando, mandatum, to bid, *mandate*
maneo, mansum, to remain, *mansion*
manifestus, plain, *manifestation*
manus, a hand, *manufacture*
masculus, hardy, manly, *emasculate*

mastico, masticatum, to chew, *masticate*, mastication
maturus, ripe, mature
mechanē (Gr. μηχανή), a contrivance, *mechanio*
medius, the middle, *mediate*
memor, mindful, *memory*
merveille (Fr.), a marvel
meta (Gr. μετά), with, *method*
minor, less, *diminish*
mitigo, mitigatum, to make mild, *mitigate*
mitto, missum, to send, dismiss, *remit*
monstro, monstratum, to point out, *demonstrate*
mors, mortis, death, *mortal*
moveo, motum, to move, *motion*, *move*
multus, many, *multitude*
munus, a gift, *munificent*
mysterion (Gr. μυστήριον), a *mystery*
natura, nature, natural
necessarius, necessary
necto, nexum, to tie, connect, *annex*
noceo, to hurt, *innocent*
nomos (Gr. νόμος), a law, *economy*
nosco, notum, to know, *notion*
numerus, a number, *numeral*
nuncio, nunciatum, to announce
nutrio, nutritum, to nourish, *nutrition*
ob, in the way, against, *object*
oikos (Gr. οἶκος), a house, *church*, *economical*
opto, optatum, to wish, *optative*
opus, operis, a work, *operate*
organon (Gr. ὄργανον), an instrument, *organio*
origo, originis, the beginning, *origin*
orno, ornatum, to deck, *ornament*, *ornate*
pando, pansum, to open, *expand*, *expansion*
panis, bread, *companion*
par, equal, *parity*
pareo, to appear
paro, paratum, to prepare
pars, partis, a part, *party*

pathos (Gr. πάθος), feeling, *pathetic*
peculium, money, private property, *peculiar*
pendeo, pensum, to hang, *pendent*, *pensile*
penetro, penetratum, to penetrate
per, through, *perambulate*
perpetuus, lasting, *perpetual*
pes, pedis, a foot, *pedal*
phaino (Gr. φαίνω), to appear, *diaphanous, phenomenon*
phusis (Gr. φύσις), nature, *physic*
placeo, placitum, to please, *complacent*
pleo, pletum, to fill, *complement*, *complete*, *replete*
plico, plicatum, to fold, *complicate*
pluma, a feather, *plume*
plus, pluris, more, *plural*
pono, positum, to place, *depone*, *deposit*
portio, a portion, *proportion*
porto, to carry, *import*
posse, to be able, *possible*
pour (Fr.), for
præ, before, *precede*
prehendo, prehensum, to take hold of, *apprehend*, *apprentice*
pretium, a price, *appreciate*
primus, first, *primal*
pro, for, forth, *proceed*
probo, probatum, to prove, *probe*
proles, offspring, *prolific*
proprius, one's own, *proper*
proximus, nearest, *proximate*
ptoma (Gr. πτῶμα), a fall, *symptom*
punio, punitum, to punish, *impunity*
putridus, rotten, *putrid*
quæro, quantum, to ask, *query*
qualis, of what kind, *quality*
quantus, how great, *quantity*
ranger (Fr.), to put in order, *arrange*
re, back, again, *return*
rego, rectum, to rule, *correct*, *regent*
rideo, risum, to laugh, *ridiculous*
ripa, the bank of a river, *arrive*
rumpo, ruptum, to break, *interrupt*

sal, salis, salt, saline
sanctus, holy, sanctify
satis, enough, satisfy
scio, scitum, to know, science
scribo, scriptum, to write, rescript,
describe
se, aside, seduce
sedeo, to sit, sedentary
sentio, sensum, to feel, sensible
sequor, secutus, to follow, conse-
quence, consecutive
series, a series
sero, sertum, to thrust, to join, assert
servo, to keep, preserve
severus, severe
similis, like, similar
sisto, to stand, consist
situs, a site
socius, a companion, social
solor, solatus, to comfort, console,
consolation
solvere, solutum, to loose, solve, solu-
tion
sorbeo, to suck in, absorb
species, a kind, an appearance,
species
specio, to see, conspicuous
specto, to see, spectacle
sphaira (Gr. σφαῖρα), a sphere
spiro, to breathe, aspire
spondeo, sponsum, to answer, re-
spond, response
statuo, statutum, to set up, to ap-
point, statute
stinguo, to put out light, extinguish
sto, to stand, stable
struo, structum, to build, construct
sub, under, subjugate
suesco, suetum, to accustom, desue-
tude
summus, highest, summit
sumo, sumptum, to take, assume,
consumption

sum (Gr. σὺν), with, together, sym-
pathy
super, above, superpose
tego, tectum, to cover, detect
tempero, temporatum, to mix, to
moderate, temperate
templum, a temple
tendo, tensum, to stretch, tendency,
tension
teneo, tentum, to hold, contain
terra, the earth, terrestrial
thesaurus (Gr. θησαυρός), a treasure
tollo, to lift up, extol
traho, tractum, to draw, attract
trans, across, transalpine
travailler (Fr.), to work, travail
tres, three, trio
trouvo (Fr.), to find, to contrive
trudo, trusum, to thrust, intrude, in-
trusion
turba, a crowd, disturb
ultimus, last, ultimates
un (S.), not, unknown, unhappy
unda, a wave, undulate
under (S.), under
uro, ustum, to burn, combustion
utor, usum, to use, utensil
valeo, I am strong, prevail
varius, different, vary
vello, vulsum, to pull, convulse
velox, velocis, swift, velocity
venio, ventum, to come, convene.
content
ventus, wind, ventilate
vereor, to fear, revere
verto, versum, to turn, versatile,
advert, revert
via, a way, viaduct
vibro, vibratum, to shake, vibration
video, visum, to see, provide, visible
vita, life, vital
volvo, volutum, to roll, voluble
voro, to devour



